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Natural Resources of
OHIO

Prepared by the - United States Department of the Interior - Stewart L. Udall, Secretary

SIR WILLIAM FAIRBAIRN
THE BUCKEYE SS CO

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The Natural Resources of Ohio

OHIO "THE BUCKEYE STATE"

Prepared by • The United States Department of the Interior • *Office of the Secretary* • *Division of Information*

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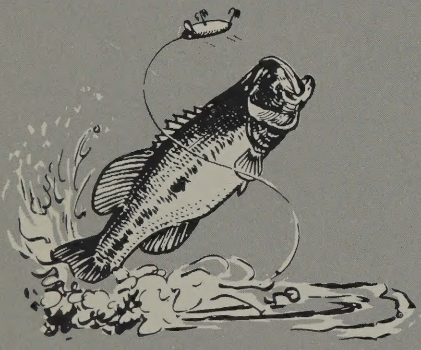
The purpose of this booklet is to bring a new awareness to the American people of our rich natural resource heritage, its history, its present, and its future. To know our land is to love it and cherish it and protect it from the ravages of both nature and man.

Stewart L Udall

SECRETARY OF THE INTERIOR



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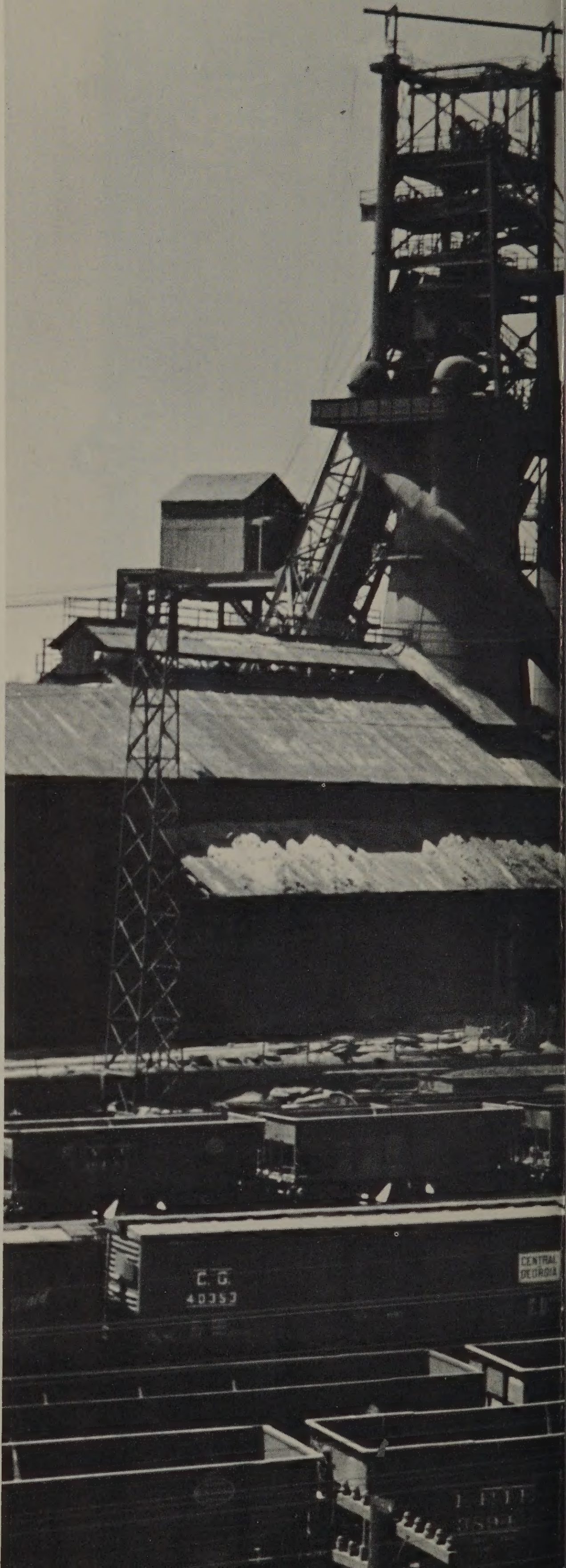
Introduction and History

One of the most interesting and well known phases of Ohio's history is the part the Buckeye State has played in national politics.

Ohio has produced many great statesmen of importance, and has sent seven native sons to the Presidency—Grant, Garfield, Hayes, Benjamin Harrison, McKinley, Taft, and Harding—as well as many influential Members of the House of Representatives and the Senate. Ohio's native sons have also served with distinction within the executive branch. For example, the first Secretary of the Interior—Thomas Ewing—came from Ohio.

Of equal importance, however, has also been the contribution of the industrial life of Ohio—large and varied—which has both supplied and processed the natural resources of the Nation.

Men have always wanted the Ohio lands. Indians clung to the lovely valleys of the Miamis, the Scioto, and the Muskingum for decades, in almost suicidal desperation. The French and English battled over the Ohio-country fur trade for years; moreover, both nations came to realize that this strip of land between the Ohio River and the southernmost tip of the Great Lakes was the key to the conquest of the entire Upper Mississippi Valley. White settlers sometimes risked their scalps for a parcel of rich Ohio land that "needed only to be tickled with the hoe to laugh with the harvest."



Ohio is a major contributor to the Nation's iron and steel supply. Steel mills like this in Struthers are found throughout the State. More steel is produced in the Mahoning Valley than in any other region in the United States except the adjoining Pittsburgh area.

BOSTON & ALBANY
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With settlement of the Far West, Ohio lands became even more coveted, for they lay along the important east-west highways and railroad lines which poured Eastern pioneers into the Western plains. Since the coming of the Age of Steel, Ohio's location has had fuller meaning than ever before, because iron ore comes down the lakes from Minnesota ranges, while coal comes immediately to hand from Pennsylvania, West Virginia, and Ohio's own fields; iron ore and coal mean steel, the production of which has lifted Ohio to a top place among the manufacturing States.

In the early days from the Virginia-Pennsylvania frontier came the Scotch-Irish and their characteristic indifference to legal restrictions. Then came the New England Puritans into the valley of the Muskingum, the Western Reserve, and, by two's and three's, into practically all other parts of Ohio.

After these came all the Middle-State representatives: English Quakers, German and Dutch religionists of various creeds—Lutherans, Reformed, Dunkards, and United Brethren—and Scotch-Irish Presbyterians who settled the Miami Valley. Then there were the Pennsylvanians, Marylanders, Virginians, and Kentuckians, who flowed into the Virginia Military District. From the Carolinas, Georgia, Tennessee, and Kentucky came large numbers of English, Scotch-Irish, and French Huguenot descent who were dissatisfied with the institution of slavery. Some came direct from England, Wales, Scotland, Ireland, Germany, and France.

These elements commingled, each affecting the other. And when in 1803, having the requisite population, Ohio became a State, it could be said, as of no other State at that time, that it was typically American. Throughout the 19th century Ohio continued to draw people from various sections of the Nation and from a variety of European countries. Ohio is still as typically American as any State in the Union; it is neither north nor south, neither east nor west; it lies where they all meet and has characteristics and habits of all.

Factories confront the Ohio traveler at almost every turn in the pike. He sees great steel mills scattered along the Mahoning Valley; pottery and coal towns sprinkled through the southeastern quarter of the State; plants in the valley of the Miamis turning out wares ranging from paper to steel; and the Lake Erie shore jammed with steamers and tugboats, giant steel plants and fresh-water fisheries.

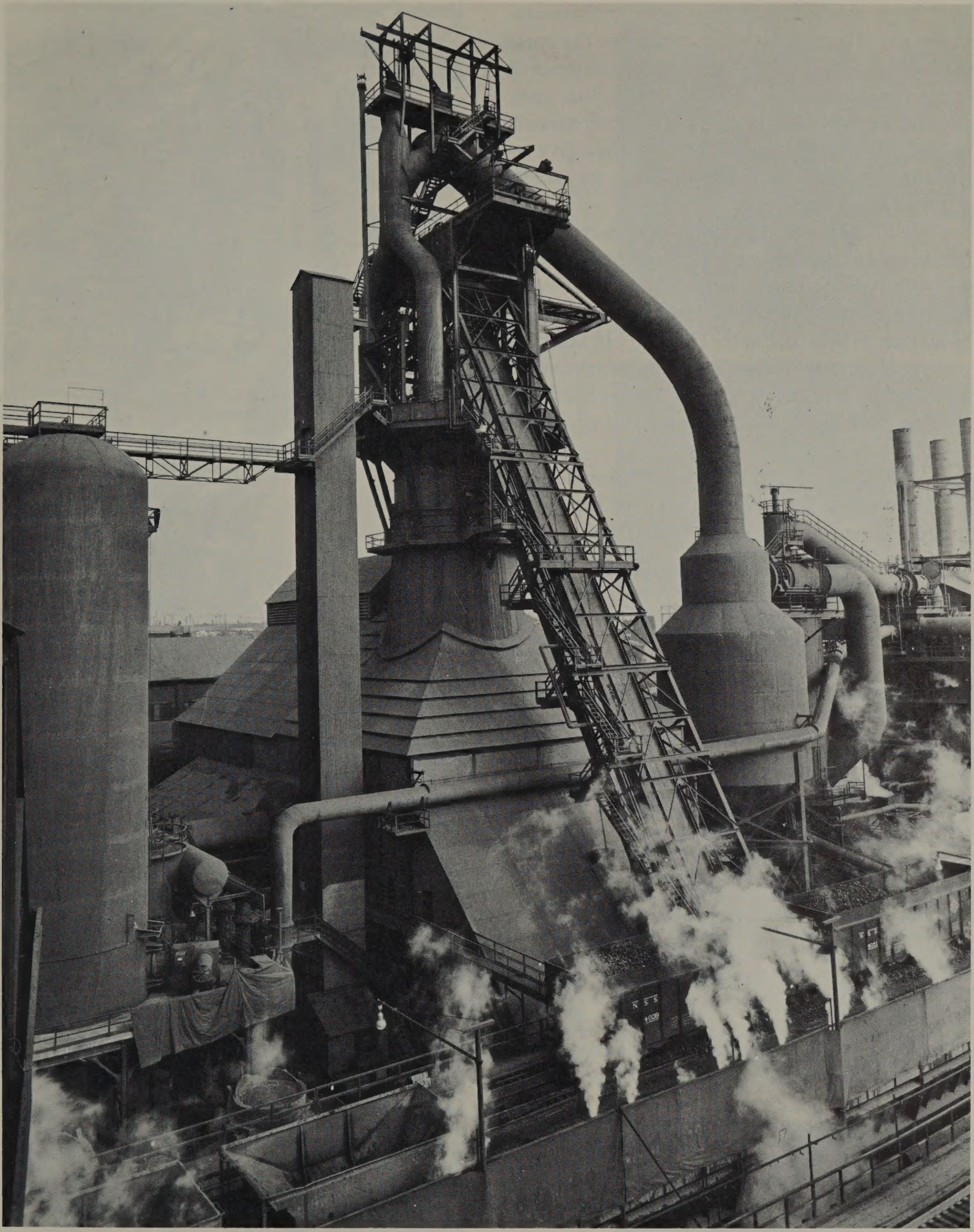
Utilizing its own natural resources and those of other States, Ohio—with a population of 10 million and a land area of 41,222 square miles—leads all other States in such diversified manufactures as rubber products, machine tools, soap, matches, cooking ranges, foundry and machine-shop products, pottery and porcelain ware, electrical machinery and apparatus, pumps and pumping equipment, steam shovels—and coffins. It is second to Pennsylvania in coke production and ranks fifth in the production of coal. The State produces annually about 16 million barrels of cement, 3 million short tons of lime, 38 million short tons of coal, and more than 29,000 million cubic feet of gas. In addition, it has sizable reserves of oil.

An example of Ohio's industrial importance may be seen in the fact that Cleveland is the world's greatest iron ore port; the factories of Akron is the world's largest single manufacturing center of rubber products. More steel is produced in the Mahoning Valley, with Youngstown as its focal point, than in any other region in the United States except the adjoining Pittsburgh area; Columbus, the State capital, is the Nation's largest producer of mine and mill machinery; and Toledo is one of the greatest glass-processing centers on earth.

Ohio is a comparatively small State (it ranks 35th in size, with only 15 smaller), but it is

Major Colleges and Universities

University of Akron
Baldwin-Wallace
Bowling Green State University
Case Institute of Technology
University of Cincinnati
University of Dayton
Fenn
John Carroll University
Kent State University
Miami University
Oberlin
Ohio State University
Ohio University
Ohio Wesleyan University
University of Toledo
Western Reserve University
Wittenberg University
Xavier University
Youngstown University



In blast furnaces such as this one in Cleveland, Ohio produces pig iron for the gray iron, malleable iron, and steel foundry industry in the midwest.

very high on the list in the matter of urbanization. Its city population outnumbers the rural more than 6 to 1. Nevertheless, as impressive to the traveler as are the scores of cities with populations of 5,000 or more are the thousands of farms, orchards, and wood lots that give to the low hills and undulating plains an atmosphere or rural well-being.

The Ohio farmer has long been particularly fortunate in his location because his State is compact and populous, on the main highway between east and west, and within easy reach of market towns that cater to him. In the rich river valleys and throughout the northcentral and western half of the State are great flat fields of corn and wheat, and pastures full of cattle, sheep, and hogs.

Special crops are grown near the large cities and in southern Ohio; in the orchard section in the northeast, northwest, and southeast; in the sugar-beet district in the northwestern part of the State; in the grape area along Lake Erie; and in the celery- and onion-raising muck lands in the Kenton, Canton, Wooster, and Sandusky areas.

A growing season averaging 164 days, plentiful rain, and large areas of fertile glacial soil are the chief factors in Ohio farming. In addition to rotation crops, farmers grow potatoes, tobacco, sugar beets, apples, tomatoes, onions, grapes, peaches, strawberries, cabbage, celery, maple trees for sugar and syrup, and grains such as barley and rye.

About one-fifth of the farmers feed steers and hogs for market during the winter; one-fourth keep sheep; and four-fifths have milk cows and raise chickens. The production of milk, butter, and cheese has become increasingly important. Corn is the mainstay of the farm, however, and the State maintains a position as one of the Nation's leading corn producers.

(Top right) Columbus, Ohio's capital city, has many important industries and research laboratories and is the home of Ohio State University. Columbus is the Nation's largest producer of mine and mill machinery.

(Right) Dayton, where the Wright brothers built the first airplane, is also the home of such inventions as the automobile self-starter and the cash register. The Air Force Museum and Wright-Patterson Air Force Base are at Dayton.

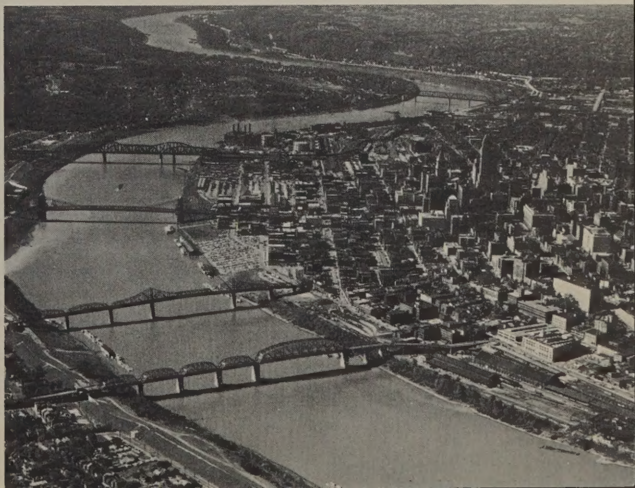
Cities of Ohio

(Right) Cleveland's Terminal Tower, landmark of the city, rises behind a network of railways leading to the harbor and storage area for industrial materials. Cleveland is the world's greatest iron ore port.

(Below) Situated on the Maumee River near the junction with Lake Erie, Toledo is a vital glass-processing center.

(Right center) The "Rubber Capital of the World," Akron is the world's largest single manufacturing center of rubber products. The city has a diversity of industries, including production of breakfast cereals and the manufacture of much of the Nation's fishing tackle.

(Right) The Ohio River, a main artery in the Nation's industrial transportation system, courses through Cincinnati. The city's business section is on the right.



Physical Characteristics of Ohio

Two hundred square miles of rivers and lakes are found in Ohio.

The State of Ohio rolls down from the mountains of Pennsylvania and West Virginia, flows into gently rising hills and fertile valleys, and flattens out in broad lands which reach to Indiana. The Ohio River turns a sweeping boundary in the east and south on its way from Pittsburgh to Cairo, and the southern shore of Lake Erie gives a water front to nearly three-fourths the northern limits of the State. Two hundred square miles of rivers and lakes are included within Ohio's boundaries, which reach 225 miles from east to west and 210 from north to south.

The rough, hilly terrain in eastern Ohio eases down momentarily and then rolls, as the Central Plains, to the Mississippi River and beyond. The surface in the western part of the State is characterized by dunes in the north, a level plain in the center, and undulating hills farther south, becoming more disturbed in the southwest, then dropping, on the banks of the Ohio River, to a level of 400 to 500 feet. The plateau area of eastern Ohio, everywhere broken into gorges, averages 1,100 feet along the Ohio River and about 700 feet in western Ohio.

Natural lakes, largely restricted to the northeastern highlands, are scarce in Ohio, and most of the larger lakes are man-made.

Much of Ohio's best agricultural land is found in the northwestern counties, while the 22 counties of southeastern Ohio contain most of the forests. The Wayne National Forest which consists of more than 100,000 acres is located in this area. The Ohio Division of Forestry also administers approximately 161,000 acres in more than 20 different units.

The climate of Ohio is characterized normally by an abundant precipitation of 32 to 42 inches which is well distributed throughout the year. Summer temperatures are rather high but not unduly oppressive. Winter temperatures are not severe with only a moderate amount of snowfall in most sections. The mean annual temperatures range from 55° F. in the extreme southern part to 50° F. in the northeast. The shortest growing season, approximately 150 days, is found in the elevated regions of northeastern Ohio, while the longest growing season, approximately 200 days, is found on the Bass Islands in Lake Erie. The climate of the State is thus favorable for a diversified agriculture.

In Ohio's southeastern hill and valley section grows the most lavish variety of the 2,500 species of plant life which the State harbors. In addition to the pitch pine, large-leaf magnolia, sourwood, arbutus, and wild honeysuckle localized in that section, there are great hardwoods, with undergrowths of sassafras, dogwood, witch hazel, pawpaw, and hornbeam. Timber and woodlands cover about 4 million acres, less than 15 per cent of the original hardwood forest which at one time nearly covered Ohio.

Throughout the State are found oak, hickory, yellow poplar, ash, pine, maple, black walnut, white elm, beech, linden, wild black cherry, black locust, willow, and sycamore. Perhaps because the tree is not commonly found east of the Alleghenies, and also because of its distinctive appearance, the buckeye (a relative of the cultivated Asiatic horse chestnut) was first called the Ohio buckeye, and gave Ohio the name of the Buckeye State. The tree can be known by its clusters of cream-colored flowers that bloom in the spring, and later form large, thick-hulled, brown nuts.

About 60 species of mammals inhabit Ohio. With the exception of a few deer and bear, only the smaller animals run wild. The opossum, squirrel, rabbit, raccoon, and red fox thrive in Ohio woods and fields. Although 358 species of birds have been known in Ohio, only about 180 species nest in the State every year.

Park and Recreation Resources

Ohio offers a wide variety of recreational possibilities. In season, Ohioans and visitors enjoy innumerable sports, from swimming along the sandy beaches of Lake Erie to fox hunting in the southern hills. Summer resorts are numerous, especially along Lake Erie. The most prominent recreational areas are Indian Lake, Buckeye Lake, Cedar Point, Lake St. Marys, the Hocking County State Parks, and Portage Lakes.

Ohio has 54 State parks, comprising a total area of almost 85,000 acres, and there are an additional 75,500 acres of local parks and recreation areas scattered throughout the State.

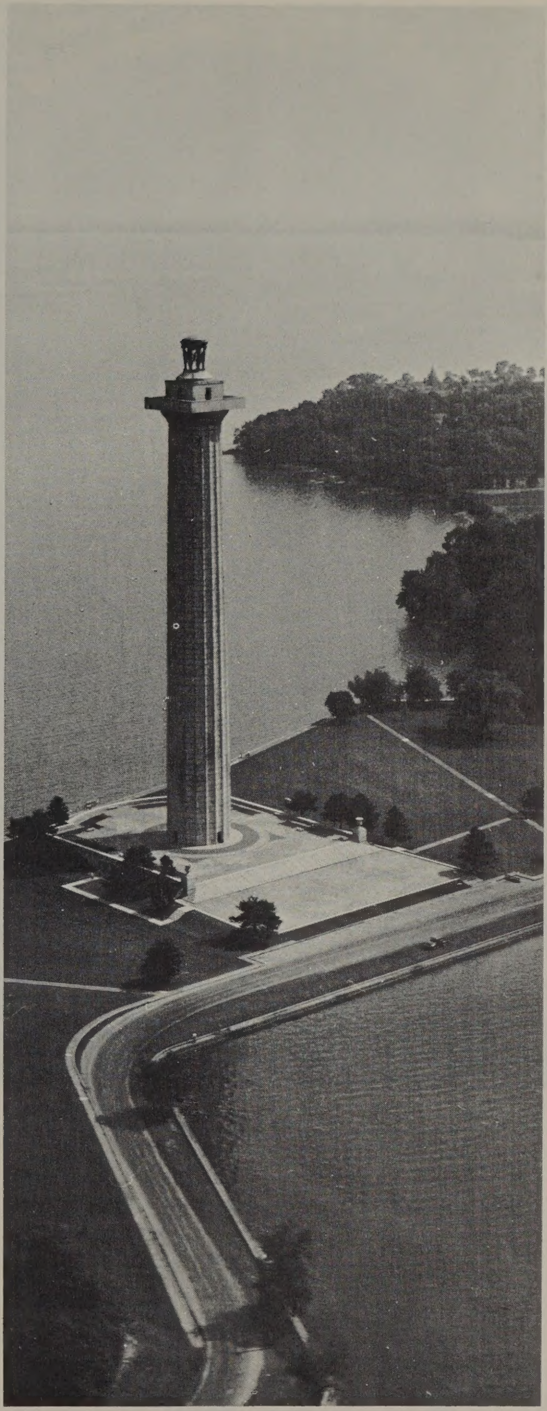
The unglaciated southeastern portion of the State presents the most diverse landscape and contains most of the forest area, including Wayne Forest.

The Lake Erie shoreline in the north presents a significant recreation resource near the most populous section of the State. Rivers and streams throughout the State offer another important recreation resource. The Ohio River with its navigation pools is particularly popular with vacationers. The Muskingum Watershed Conservancy District has demonstrated the possibilities for recreation that lie in a locally administered flood control project. Several of the reservoir areas administered by this agency receive heavy recreation use. U.S. Army Corps of Engineers reservoirs planned and under construction are important for recreation in an area where lakes are scarce.

Reservoirs, constructed by the Corps, offer a variety of boating, camping, swimming, and picnicking opportunities. They are: the Berlin Reservoir on the Mahoning River; the Delaware Reservoir on the Olentangy River; the Dillion Reservoir on the Licking River; the Tom Jenkins Reservoir at the Burr Oak Dam; the West Fork of the Mill Creek Reservoir; and 14 reservoirs constructed along the Muskingum River.

Although the actual acreage of Ohio's Wayne National Forest is only 107,907, the forest roams over a gross area of 1,454,975 acres.

Among the many streams and lakes within the forest is the 143-acre Lake Vesuvius, a natural center for recreation, accommodating fishermen,



Perry's Victory and International Peace Memorial National Monument, on South Bass Island on Lake Erie, commemorates the great naval battle of the War of 1812 and the enduring peace between the United States and Canada.

Visitors enjoy spacious well-kept camping and picnic grounds at Vesuvius Recreation Area in Wayne National Forest.

swimmers, rowers, and paddlers, as well as sunbathers, campers, picnickers and horseback riders along its winding shores.

Recreation facilities established to date on the Wayne National Forest includes two public campgrounds, five picnic areas, one swimming site, and one boating site.

Sites illustrating the interesting prehistoric cultures that once flourished in Ohio have great educational value, and a number of such sites as well as areas illustrating the rich history of the State are preserved under the administration of the Ohio Historical Society.

The National Park Service of the Department of the Interior administers two National Monuments in Ohio with an annual visitor total of more than 100,000. They are:

Mound City Group National Monument—Located an hour's drive south of Columbus, near Chillicothe, this is the site of an outstanding prehistoric burial shrine. It was used for 1,000 years—from 500 B.C. to 500 A.D.—by the ancient Hopewell Indians, and was first excavated in 1846.

Perry's Victory and International Peace Memorial National Monument—The Monument is located on South Bass Island in Put-in-Bay on Lake Erie. It was near this point that Commodore Perry won the greatest naval battle of the War of 1812. Here also is commemorated the century-old 3,000-mile unfortified boundary of two nations—Canada and the United States.

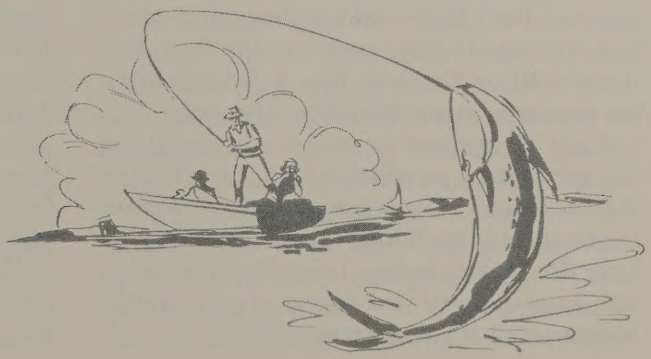
In addition to its rivers and Lake Erie, Ohio has well over 100 inland lakes, ponds, and reservoirs which provide water sports. In winter, on Lake Erie, ice boating and skiing on the island slopes are popular recreational pursuits.

Today, Ohio's tourist-vacation industry ranks third behind manufacturing and agriculture, with an estimated annual value of more than $100 million.

Privately-Owned Recreation Facilities

Privately-owned recreation facilities are of major importance in Ohio. These vary from resident summer camps for boys and girls to fine hunting areas. The State's crop and pasture lands contribute significantly to the supply of outdoor recreation opportunities. Many operate as vacation farms, accepting tourists who live at the farm during their stay. Others lease or supply hunting opportunities, often in combination with cabin facilities. Camping, picnicking, fishing, hiking, horseback riding and guide services are provided by some. Many lease or sell scenic sites for home and camp lots.

Lists of all the privately-operated recreation opportunities in Ohio are not available from any single source. Travel bureaus and agencies, commercial organizations such as gasoline companies, motel and hotel associations, airlines and railroads, local Chambers of Commerce and outdoor clubs and organizations all can supply information on many of the privately-owned facilities. Local inquiry will reveal others. Information is available from the Department of Natural Resources, Division of Parks, Hanger Building, 1500 Dublin Road, Columbus 12, Ohio.



Fish and Wildlife Resources

The best game fishing in Ohio centers around the black bass, the most common and most widely distributed fish of the larger sporting species. Both large- and small-mouthed black bass are found in every county of the State, and the spotted or Kentucky bass is indigenous to the streams of many Ohio River counties.

While Ohio's bass have a strong appeal for the sportsman, conservation authorities believe that the State's crappie fishing accounts for the largest share of the fishing licenses issued yearly. Lake St. Marys, Indian Lake, Buckeye Lake, and Lake Loramie are inland waters widely known for their spring crappie fishing.

The other chief game and pan fish are the wall-eyed pike, the Ohio muskellunge, white bass, perch, saugers, bluegills, rock bass, and channel catfish. Carp and suckers and various kinds of bullhead catfish are found in nearly every creek and pond.

The greatest variety of sporting and edible fish is found in Lake Erie; the southern shore, open water reefs, and offshore islands are nationally famous. Along the shore and islands, large- and small-mouthed bass, white bass, yellow perch, bluegills, rock bass, wall-eyed pike, catfish, smelt, carp and sheepshead are plentiful. The waters off Marblehead Peninsula, the Bass

Islands, Kelleys Island, and Cedar Point are favorite fishing sections of the lake, and the numerous ports and resorts of the lake front—including Port Clinton, Sandusky, Lakeside, Marblehead, and Catawba—also attract large numbers of sports fishermen.

On Lake Erie fishing is a year-round sport. When winter transforms the lake into a plain of ice, a populous city springs up. Ice-fishing shanties mounted on sleds dot the lake in the vicinity of the Bass Islands and the mainland. Sitting in his shanty by a blazing coal stove, the fisherman enjoys an unusual sport, pulling pike, yellow perch, and smelt through a hole in the ice and the floor of his shanty. A hand line is used, and sometimes as many as 200 fish are caught in a single afternoon.

The best stream-fishing area of the State is the Muskingum Valley, which embraces such streams as Killbuck and Wills Creeks and the Walhonding, Kokosing, Mohican, Tuscarawas and Muskingum Rivers. Bass and walleyed pike are the predominant game species, although hundreds are attracted to the Muskingum near McConnellsville, Stockport, and Beverly in quest of giant muskellunge that feed below the dams.

The streams of northeastern Ohio, the Vermilion, Huron, Cuyahoga, and Chagrin Rivers are heavily fished, but provide only fair sport. Practically all native species can be found in the Maumee-Sandusky section, including the Maumee, Auglaize, Portage, Sandusky, and Blanchard Rivers.

In middle Ohio, the Scioto River system provides good everyday fishing for large- and small-mouthed bass, crappies, bluegills, channel cats, and carp. The Olentangy River above Columbus, and Deer Creek near Mount Sterling are especially good fly-fishing streams.

The Mad River and its tributaries are the only public trout fishing streams of the State. Trout of large size are often taken, but the fishing in these streams is uncertain at best. The two Miamis are excellent bass waters.

The Hocking River provides only fair fishing, mine seepage having spoiled its former excellence. The Kentucky bass is found in this section of the State. Many of the streams of southern Ohio emptying directly into the Ohio River contain Ohio muskellunge.

Although Ohio is heavily populated and industrialized, it provides excellent upland game hunting, waterfowl shooting, and nocturnal sport with hounds.

Upland game consists chiefly of the cottontail rabbit or hare—which is widely distributed—the ring-necked or a Mongolian pheasant, and the Hungarian partridge.

Ohio's native game bird is the quail, which for many years now has been protected by legislative enactment. Consequently, bird-dog fanciers have had to turn to the ring-necked pheasant and Hungarian partridge for their sport. These two foreign species have been widely planted in Ohio, and the pheasant, especially, has flourished. It is now the principal game bird of the State, and Ohio boasts the best pheasant shooting east of the Mississippi. In some counties, notably Wood County, it is not unusual for hunters to bag their day's limit in 15 minutes afield.

The best duck shooting is found in the marshes along Lake Erie, but good sport is also to be had at the inland lakes and on the river reservoirs.

The cottontail rabbit is the most hunted animal in the State with more than 90 per cent of the hunters seeking them every hunting season Today, Ohio hunters harvest more than 2,500,000 rabbits annually.

The fox squirrel is of moderate importance in providing hunting opportunity. Current agricultural endeavors whereby increasing numbers of woodlots are being cut to produce new grain and pasture lands result in a smaller habitat base for the fox squirrel, though close to a million still are harvested each year.

The distribution of the raccoon is statewide, with the highest populations found in areas within and bordering agricultural areas. As in most States, the raccoon is both a game and fur animal in Ohio. Raccoon hunting is a popular form of recreation in certain areas of the State.

The principal forest game species are the ruffed grouse, white-tailed deer, and gray squirrel. Of minor importance among the forest wildlife species is the gray fox which is not protected by law and is classed as a predator. Recent intro-

Biologists measure changes in the composition of Lake Erie fish stocks which offer the greatest variety of desirable catches. Along the shore and islands, large and small-mouthed bass, yellow perch, bluegills, wall-eyed pike, catfish, smelt, and carp are plentiful.

ductions are the Reeves pheasant and wild turkey which are protected species. Over 8,600 Reeves pheasants have been released in five forested eastern counties. More than 300 wild turkeys have been counted on four widely separated forest release sites. A few black bears, remnants of a once extensive population, have been reported in remote sections of southeastern Ohio.

The ruffed grouse population is almost entirely limited to the Allegheny Plateau. Grouse present an excellent hunting opportunity since large areas of public hunting land are available, and the open season is approximately four months in length.

The big game animal of Ohio is the white-tailed deer. This species is not strictly a wilderness animal as it is found in all areas of the State. The deer harvest totaled well over 3,000 in 1961.

Gray squirrels are found mainly in the southern and eastern portions of the State. This species is popular with early fall hunters and therefore is a significant resource.

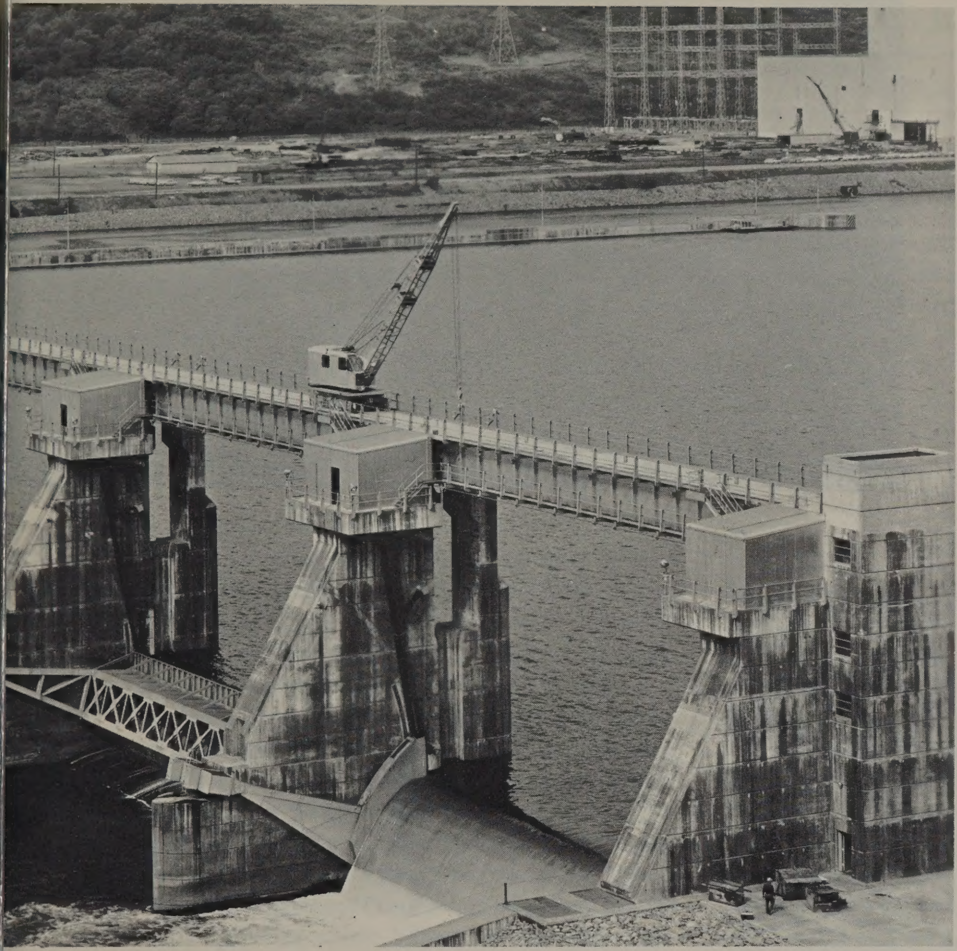
Wetlands and marshes support significant numbers of muskrat and mink and one important species of waterfowl—the wood duck. This duck nests and produces young on many streams and lakes throughout the State. Canada geese flocks have recently been established at St. Marys Lake, Killdeer Plains, Mosquito Creek Reservoir, and Delaware Reservoir.

Aside from the wood duck, Ohio also provides hunting opportunity for other ducks and geese. The total kill for the 1961 waterfowl season amounted to 102,000 ducks and 7,200 geese. The woodcock, gallinule, Wilson's snipe, Virginia rail, sora rail and king rail are of minor importance and furnish only a limited amount of hunting. If these minor game birds become less abundant than they are at present, it will be due to continued drainage of wetland areas and hunting habitat destruction, rather than hunting pressure.

An estimate based upon the 1960 National Survey of Fishing and Hunting, conducted for the Bureau of Sport Fisheries and Wildlife by the Bureau of the Census, showed that Ohio had nearly 2 million sports fishermen and well over 1 million hunters. These figures have, of course, increased. The entire State contains only 26 million acres, and each year about 200,000 acres of land goes out of production as it passes into other uses such as highways, industry, and new residential areas.

Competition for available land is keen, and conservation officials are faced with an enormous problem in their efforts to provide adequate public hunting and fishing areas for the ever growing number of sportsmen.

Water and Power Resources



The New Cumberland Locks and Dam

In the early 19th century a native of Ohio with a sound sense of prophecy might well have said about his State: "Our future lies upon the water." For, most of the large cities in the State began on water routes.

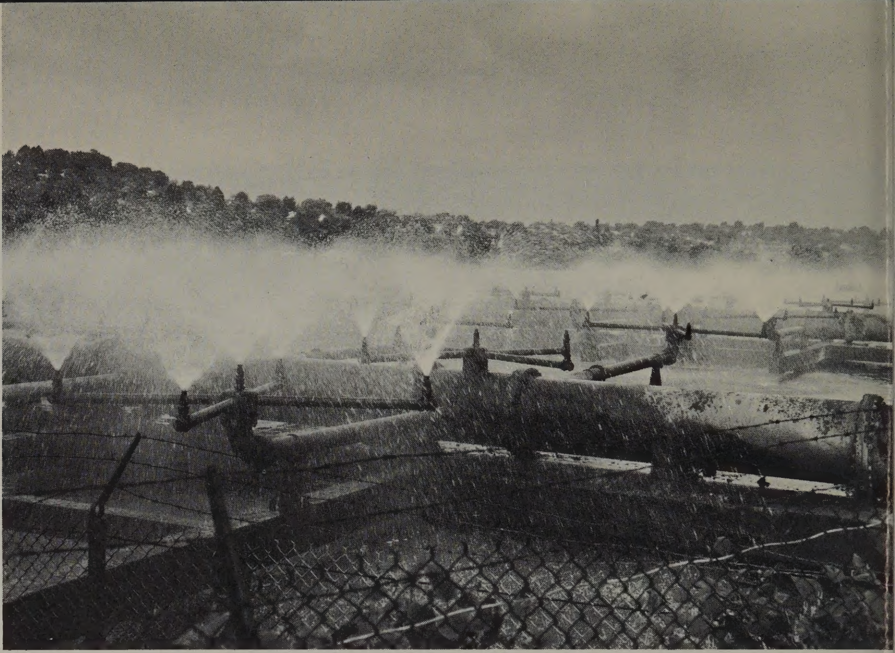
People coming down the Ohio founded Marietta and Cincinnati; those traveling its tributaries built such communities as Hamilton, Dayton, Springfield, Portsmouth, Chillicothe, Columbus, Zanesville, and Youngstown. Good Lake Erie harbors determined the location of such cities as Cleveland, Lorain, Sandusky, and Ashtabula.

The early development of Toledo, encompassed on three sides by huge swamps, could have been accomplished only by means of Lake Erie and the Maumee River; and Akron really began as a camp of laborers working on a canal.

The adventure of coming down the water to establish settlements likewise accounts for the origin and development of a line of smaller communities, such as Gallipolis, Pomeroy, Ironton, and Ripley on the Ohio, and Winchester, Miamisburg, and other towns which sprang up along the canals and usually stopped growing after the canals were abandoned.

In the early 1800's, Ohioans became convinced that the steamboat was a feasible means of transportation and they began, especially at Cincinnati, to build steam-powered craft and board them for trips to sundry places reached by water. Soon many small, stern-wheel, flat-bottomed

The importance of water for developing Ohio's industries is illustrated by its use at this rubber plant in Akron.



boats were being driven by steam on the Ohio and up the Muskingum, Hocking, Scioto, and Miami Rivers.

But, few of Ohio's rivers were navigable, and farmers within the interior of the State clamored for avenues to market. Favorable reports on the Erie Canal of New York State, begun in 1819, soon reached the west, and the people of Ohio decided that they, too, could solve their transportation problems by building canals which would enable watercraft to travel between Lake Erie and the Ohio River. The Ohio and Erie Canal, from Cleveland to Portsmouth, and the Miami and Erie, from Cincinnati to Dayton (later extended to Toledo), were begun with elaborate ceremonies in the summer of 1825. First opened in 1827 and completed 20 years later, these 813 miles of canal gave agriculture and the infant industries of Ohio many markets, attracted thousands of immigrants to the State, tremendously increased all kinds of traffic, and connected interior Ohio with New York and the Atlantic Coast markets, with New Orleans and the marts of the Deep South, and through all these with the trading centers of foreign countries.

For about a quarter of a century, until the advent of the railroad, the canal system was well traveled. By the time of the Civil War, Ohio had more lines of railroad than any other State in the Union. But the upsurge of the railways meant a decline of the stagecoach, freight wagon, pack-train—and in use of the canals, which were almost defunct by 1900.

Today, water travel has again resumed a significant place in Ohio shipping and travel. On Lake Erie, ore boats ply between Ohio points and the Lake Superior ore regions, and passenger and pleasure craft between principal cities and summer resorts. Barges are seen on the Muskingum, and small river steamers, houseboats, shantyboats, motor boats, and barges navigate the waters of the Ohio River, whose canalization from Pittsburgh to Cairo was completed in 1929.

Water Supplies

Moderate supplies of ground water, sufficient for small communities and commercial and industrial establishments, can be developed in almost all parts of Ohio. Large supplies, sufficient for cities and large industries, can be developed from the alluvium and adjacent glacial outwash along the major streams, from the outwash away from the streams in a few areas, and locally from the bedrock in the central and western parts of the State.

Water supplies have been overdeveloped in only a few places and although pollution problems are of increasing concern the State has taken steps to combat them. The aquifers of Ohio are capable of producing several times the amount presently developed, especially along the Ohio River and other large streams.

Generation of electric power in Ohio is primarily from steam plants. However, as of January 1, 1960, the developed hydroelectric capacity was 11,924 kilowatts. Plants on the Miami and Stillwater rivers in the Ohio River Basin on the State's southern border accounted for 3,775 kilowatts of this installed capacity; and plants on the Cuyahoga, Sandusky, and Auglaize rivers in the Lake Erie drainage area to the north had an installed capacity of 8,149 kilowatts. As of the same date, undeveloped hydroelectric capacity was estimated at 342,000 kilowatts, primarily at sites on the Ohio River. Other undeveloped sites were on the Little Miami River and its East Fork and on Caeser Creek.

The plentiful supply of fuel—coal, coke, and natural gas—in Ohio has, of course, been a significant factor in the development of the electric power industry and in the intensive industrialization of the State as a whole. Coal is and has been the predominant boiler fuel throughout the history of thermal electric power in the United States.

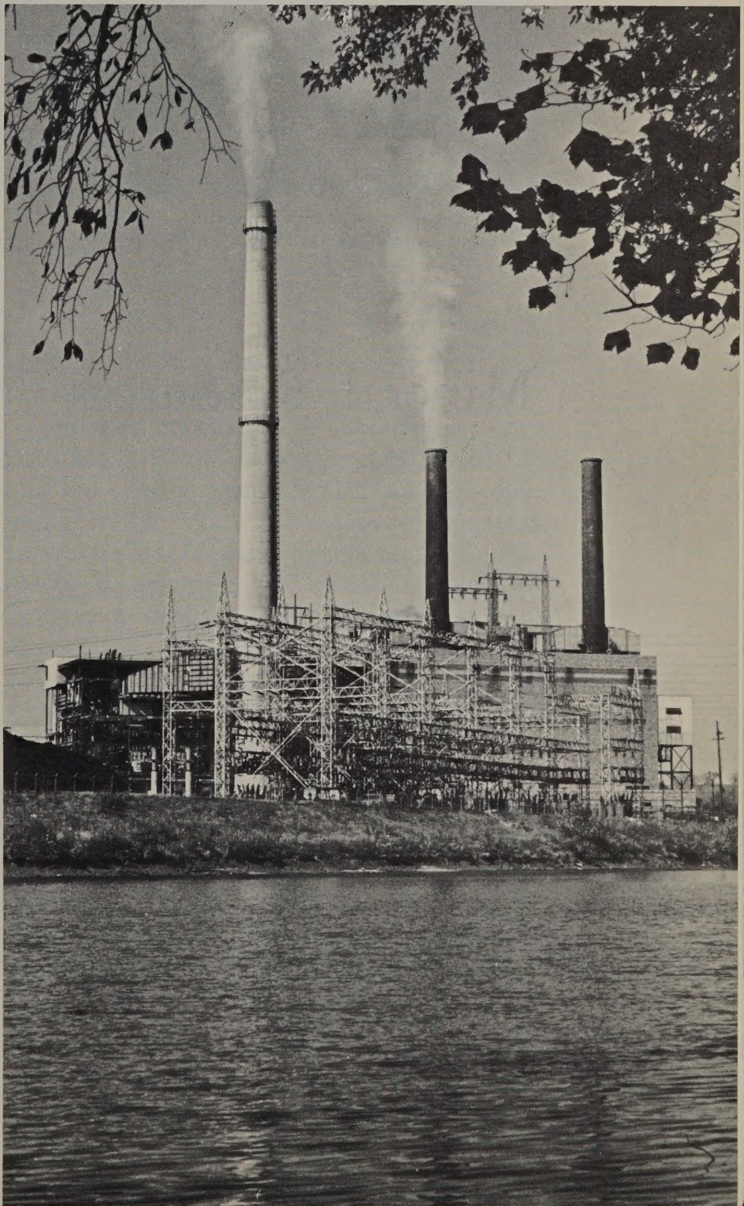
The Ohio River, while not developed for hydroelectric power production in Ohio, has been a main artery of commerce serving with the railroads as a prime carrier of coal. One unique means of delivery of coal for power plant use is a coal pipeline about 100 miles in length from the Ohio coal fields to the Eastlake power plant of the Cleveland Electric Illuminating Co.

A 1960 report of the Federal Power Commission listed 10 large power companies in Ohio with a total of 28 steam plants having a total of more than 10,000 megawatts installed nameplate capacity. The companies are Cincinnati Gas & Electric Co., Cleveland Electric Illuminating Co., Columbus & Southern Ohio Electric Co., Dayton Power & Light Co., Hamilton Municipal Electric & Gas Department, Ohio Edison Co., Ohio Power Co., Ohio Valley Electric Corp., Orrville Municipal Utilities, and Toledo Edison Co.

As of December 31, 1960, among the 10 largest steam electric plants in the country was the fifth-ranked Kyger Creek plant at Gallipolis, an Ohio Valley Electric Corp. plant with installed nameplate capacity of 1,086.3 megawatts.

Ohio Power Co., Toledo Edison Co., and Dayton Power & Light Co. are among those having hydroelectric plants. Other hydroelectric plants are operated by manufacturing concerns: Vaughn Machine Co., Bendix Aviation Corp., Sorg Paper Co., and Maxwell Paper Co.

Ohio is looking toward the production of electric power in nuclear plants. One such plant at Piqua, Ohio, with an installed capacity of 12.5 megawatts, is in operation.



Ohio rivers supply water for cities, farms, recreation, and industries. The Muskingum steam power plant is part of Ohio's growing electrical capability.

Mineral Resources

Ohio, among the Nation's leading coal-producing states, obtains most of its coal from strip mining operations such as this in the eastern part of the State.

Ohio is richly endowed with mineral fuels and nonmetallic minerals, which are the basis for the great industrial development of the State. With an annual mineral output valued at approximately $400 million, the Buckeye State is a leading producer of cement, stone, lime, clay, coal, iron and steel, ferroalloys, blast-furnace slag, and salt.

Of Ohio's 87 counties, only one—Fulton County on the State's northwest border—has no mineral production. At least a dozen counties consistently report mineral output exceeding $10 million annually. Among the State's leading mineral producers are Harrison, Belmont, Greene, and Lake counties.

Iron and Steel

A favorable location between resources of iron ore in the Upper Midwest and reserves of coking

A forested area, which eight years ago was strip mined, is now part of Wayne National Forest and demonstrates how such land can be rehabilitated for recreation use.

coal in Pennsylvania and West Virginia, plus ready access to large markets has helped Cleveland and Youngstown become major steel-producing centers. The State contributes nearly one-fifth of the Nation's iron and steel supply, and is a major source of such alloys as ferromanganese, silicomanganese, ferrosilicon, and ferrochromium.

Availability of coal for power generation and nearness to ample supplies of water have enabled Ohio to attract producers of other structural metals, such as aluminum, beryllium, titanium, and zirconium, and production of these is steadily expanding.

Coal

Ohio is listed consistently among the Nation's top coal-producing States. Strip mines supply most of the coal, about 70 per cent, with the remainder coming from underground mines and auger operations. Harrison and Belmont counties lead in coal production.

Ohio also ranks high in coke output. Approximately 90 per cent of the coke is made by iron and steel companies which use it in their own blast furnaces. The remainder represents sales to blast furnaces, foundries, and other industrial consumers, and a small amount used for home heating. Ohio coke ovens supply, as byproducts, substantial amounts of coke-oven gas, ammonium sulfate, coke-oven tar, and light oil that is a source of benzine, toluene, and other chemicals.

Coal-bearing rocks in the eastern and southeastern parts of Ohio contain reserves of about 42 billion tons of bituminous coal, the prime source of energy in the State. Since coal mining began in Ohio in the early 1800's, about 4 billion tons of coal have been mined. Thus Ohio's remaining reserves of high-grade coal are amply sufficient for future production of energy as well as for other industrial and domestic uses.

Oil and Gas

Ohio has considerable reserves of oil and gas, although these fuels are not as abundant as coal. Oil has been produced in Ohio since 1860, a year after the modern petroleum industry began by the drilling of the Drake well at Titusville, Pa. At one time Ohio was among the leading oil-producing States, but today with many of its fields nearing depletion, Ohio ranks 21st. Proven reserves of oil are estimated to be about 75,700,000 barrels. Much of the oil is suitable for the production of high-grade lubricants.

Drilling for natural gas became an important business in Ohio in the 1880's, and for many years the abundant supply of this fuel attracted new industries to the State. Recently, however, the demand for natural gas has far outrun domestic production, and Ohio has become a consumer of gas from other States. Nonetheless, about 30 billion cubic feet of gas are produced each year, and proven reserves total some 900,000 million cubic feet.

Cement

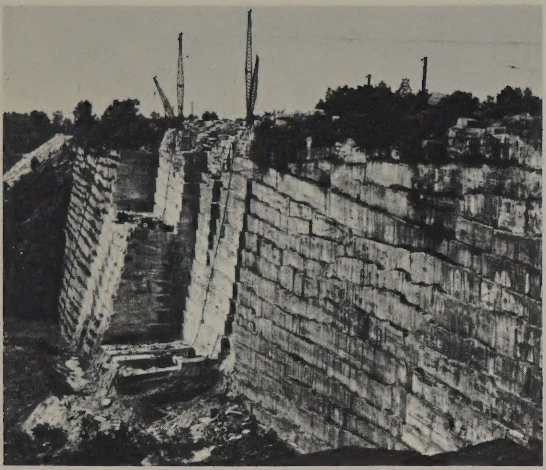
Growth of construction throughout Ohio has stimulated output of portland and masonry cement, and also of such materials as limestone, cement rock, calcareous marl, clay, gypsum, sand, and sandstone, from which cement is made. The combined annual capacity of all Ohio's cement plants is close to 25 million barrels a year.

Salt mining, basic to the chemical industry and one of the oldest mineral industries in the State. Here salt is loaded from a mine one mile deep in the earth.

Limestone and dolomite, which are found at many places in Ohio, are used in large amounts in the chemical industry, for fluxstone in the reduction of iron ore, for the manufacture of cement, for railroad ballast, road metal, and cement aggregate. Considerable amounts of limestone are used each year as a soil conditioner.

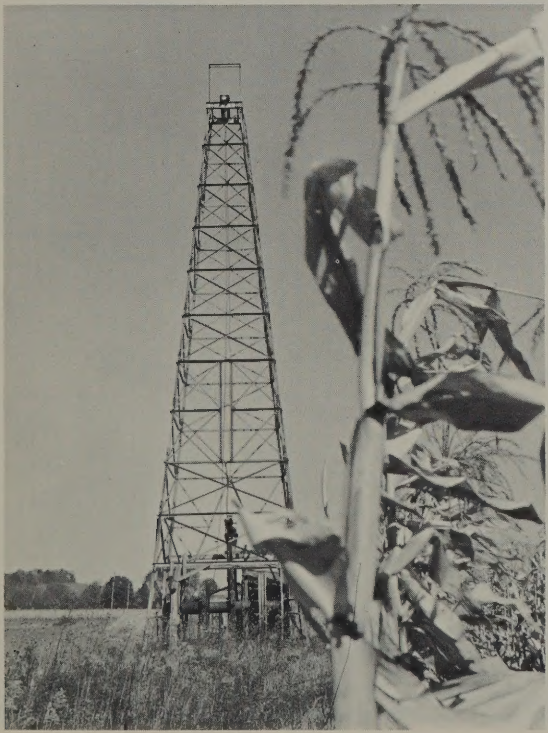
Clays

Ohio is one of the leading clay-producing States. Clay for use in refractories, cement



Ohio is the Nation's leading producer of sandstone. One of the world's largest operations, the Buckeye Quarry, is in the Berea Sandstone at South Amherst.

Ohio has considerable reserves of oil and gas. Oil has been produced in the State since 1860 and is widely used today in manufacturing high-grade lubricants.



manufacture, and other purposes, is produced in 36 counties, of which the most important producers are Cuyahoga, Tuscarawas, and Stark.

Most better-grade clays are found in the coal-bearing rocks in the eastern part of the State. Lower-grade clays are widespread. Many clays are suitable for manufacturing fire-proofing materials, insulators, furnace-, flue-, and chimney-liners, stoneware, pottery, paving and face brick, tile, and sewer pipe. Total annual production of the various clays is about 6 million tons.

Clay shale from coal-bearing rocks also is found in quantity in the State. It can be ground and substituted for part of the clay used in the manufacture of such ceramic ware as brick, hollow tile, sewer pipe, and garden pottery. Recently considerable amounts of shale have been bloated by heat and used in the production of light-weight aggregate for the building trade.

Salt

Salt is another important nonmetallic mineral. Much of Ohio's salt is consumed by its human and domestic animal population. Salt is basic to the chemical industry. Large amounts are also used in meat packaging, in tanning leather, and to keep the State's roads and streets free of ice in the winter. It is used in the manufacture of ceramics, glass, and soap.

The salt industry is one of the oldest in the State. Early settlers evaporated brines from some of the sandstones of the coal-bearing rocks to obtain their salt. Later, wells were drilled to the more deeply buried sandstones in search of stronger brines. After the discovery that beds of rock salt were present in the eastern part of the State artificial brines were obtained by circulating hot fresh water through the beds of rock salt.

Recently several companies have been mining salt by shaft mines along the shore of Lake Erie near Cleveland and Painesville. Ohio's yearly production of salt is about 3 million tons, with Lake, Summit, Meigs, and Wayne Counties the leading producers.

Lime, Gypsum, and Sandstone

Ohio is the Nation's leading producer of lime for refractory, building, chemical, and other industrial uses. Output of this mineral, centered chiefly in Sandusky County, exceeds 3 million tons a year.

Gypsum, a hydrated form of calcium sulfate has been mined along the shore of Lake Erie near Sandusky since 1822. Gypsum is used to manufacture plaster, plasterboard, and special industrial plasters and cements. Small amounts of gypsum are used in the ceramic and chemical industries. Raw gypsum is used to condition some soils. Ohio annually produces between 300,000 and 400,000 tons of gypsum.

Ohio is the leading producer of sandstone in the United States. Sandstone has been quarried in the State for many years as a building stone and for abrasives. Grindstones from Ohio are world famous, though recently artificial abrasives have decreased their importance. At the same time, however, the demand for high-silica sandstone for refractory brick, furnace liners, and for glassmaking has greatly increased. Currently, much of the annual production of 2 million tons of sandstone is used in foundries and glass factories.

Sand and Gravel

Sand and gravel are found at many places in Ohio. Both are used in great quantities by the building and construction trades. Considerable amounts are also used in foundries and in sandblasting, grinding, and polishing. Ohio annually produces about 30 million tons of sand and gravel.

Other mineral products important to Ohio's economy include stone, iron oxide pigments, lead and zinc pigments, gemstones, and peat.

Processing of some of Ohio's mineral resources is done at gigantic plants such as this at Maple Grove. Scene includes a view of the adjacent dolomite quarry.

Land Resources

When the first settlers came to the Ohio country they found great reaches of level wooded land and fertile limestone soil that would grow clover and hay as well as wheat and corn. The corn that they planted shot up 14 feet in the river valleys and yielded 100 bushels to the acre; vegetables grew like weeds. At Zanesville and other places, these early farmers found clay, pure and tough, which they molded and baked into stoneware. In the hilly eastern section they came upon coal, and in the north and south they found a prized commodity—salt.

Later discoveries of riches in the earth, such as limestone, oil, and gas, have combined to raise the State to its present position of leadership in mineral production, industry, and agriculture.

But in the later part of the 19th century and in the early 1900's, Ohioans were spendthrift in exploiting the State's resources. By the early 1930's, 90 per cent of the trees had vanished, their lumber often used in the construction of houses and barns. On much of the land, timber was burned so that the farmer might have broader fields. Great sections of the State lay impoverished. Water that formerly trickled down hills thick with humus swirled down grassless gullies, and fields that once supported tall corn had lost their topsoil and grew only tufts of grass.

By the 1940's the condition of Ohio's land was such that it became obvious only a massive conservation effort could restore its richness and productivity. The movement started, and State departments of agriculture, forestry, and conservation launched intensive programs designed to teach farmers how to protect their

In the rich river valleys and in the north-central and western half of Ohio are found great fields which make the State a leading corn producer.

A wide range of timber species, predominantly hardwood, is native to Ohio and important for pulp for the paper industry.

lands, while at the same time restocking field and stream with game and fish. Denuded hillsides were planted in trees. Soil building was carried on by many agencies, with the Federal Government providing financial assistance and leadership not only to these programs, but to large-scale flood control measures as well.

These programs have been continued and enlarged through the past 20 years, and how well they have succeeded may be seen in the following brief review of conditions existing today.

Forest Resources

Ohio is and always will be predominantly a hardwood region. However, certain of the pines and hemlock do occur naturally and have produced excellent lumber.

Ohio has a varied topography, numerous types of soil, and a marked variance in climate between northern and southern extremities of its borders. About 33 of its 88 counties—those lying in southern and eastern Ohio—are wholly or partly unglaciated. All of these factors have had a marked effect on vegetation, and account for the wide range of timber species native to Ohio.

North-central counties of the State are the southernmost limits of natural white pine growth, while the southern hill counties mark the northern limit of the shortleaf or southern yellow pine. The same situation prevails among the hardwoods.

Hardwood species produced in Ohio include: white oak, red oak, white ash, hard maple, black maple, tulip poplar, basswood, hickory, and beech. There are at present 3,133,000 acres of the oak-hickory type forest.

In the mixed hardwood forests of Ohio certain tree species are usually found in close association in certain definite areas. Such factors as soil characteristics, moisture, topog-

Ohio timber is debarked at a saw mill preparatory to making pulp.

raphy, and compatibility of species are governing influences of the forest community.

Federal, State, county, and municipal governments own approximately 5 per cent of the commercial forest land, and industry and private owners control the rest.

Statistics

Total area of State (acres)	26, 240, 000
Total forest area (acres)	5, 446, 000
Per cent forest, of State	20. 8
Commercial forest land (acres)	5, 396, 000
Noncommercial forest land (acres)	50, 000
Volume of sawtimber in commercial forest (board feet)	14, 650, 000, 000

Range Resources

Ohio long has ranked as a leading State in beef production. In the southeastern portion of the State, many beef type cows are kept and feeder stock raised. Here the beef cattle enterprise is based on the large proportion of land in permanent pasture. Young stock is raised and some of it is sold to be fattened in the corn belt; some is sold as grass cattle; and some fed out on those farms which have available corn.

In the western Ohio counties, some farmers raise their own feeder stock while others feed western-raised animals. Leading cattle-feeding areas are in Madison, Fayette, Pickaway, and adjoining counties. Other active cattle-feeding areas include Wood, Hancock, and Putnam Counties in the northwest.

There are about 2,000,000 head of sheep on Ohio farms, long known for the quality and quantity of their wool. Ohio produces more wool than any State outside of the Far West.

Private, State, and Indian Lands:	*Acres*
Open permanent pasture and range	3, 360, 000
Woodland pasture and range	1, 537, 000
Federal rangelands:	
Grasslands, woodlands, etc	6, 000
Total	4, 903, 000

Geologic History

Glacial hillocks in the central interior lowlands of Ohio, south of Columbus.

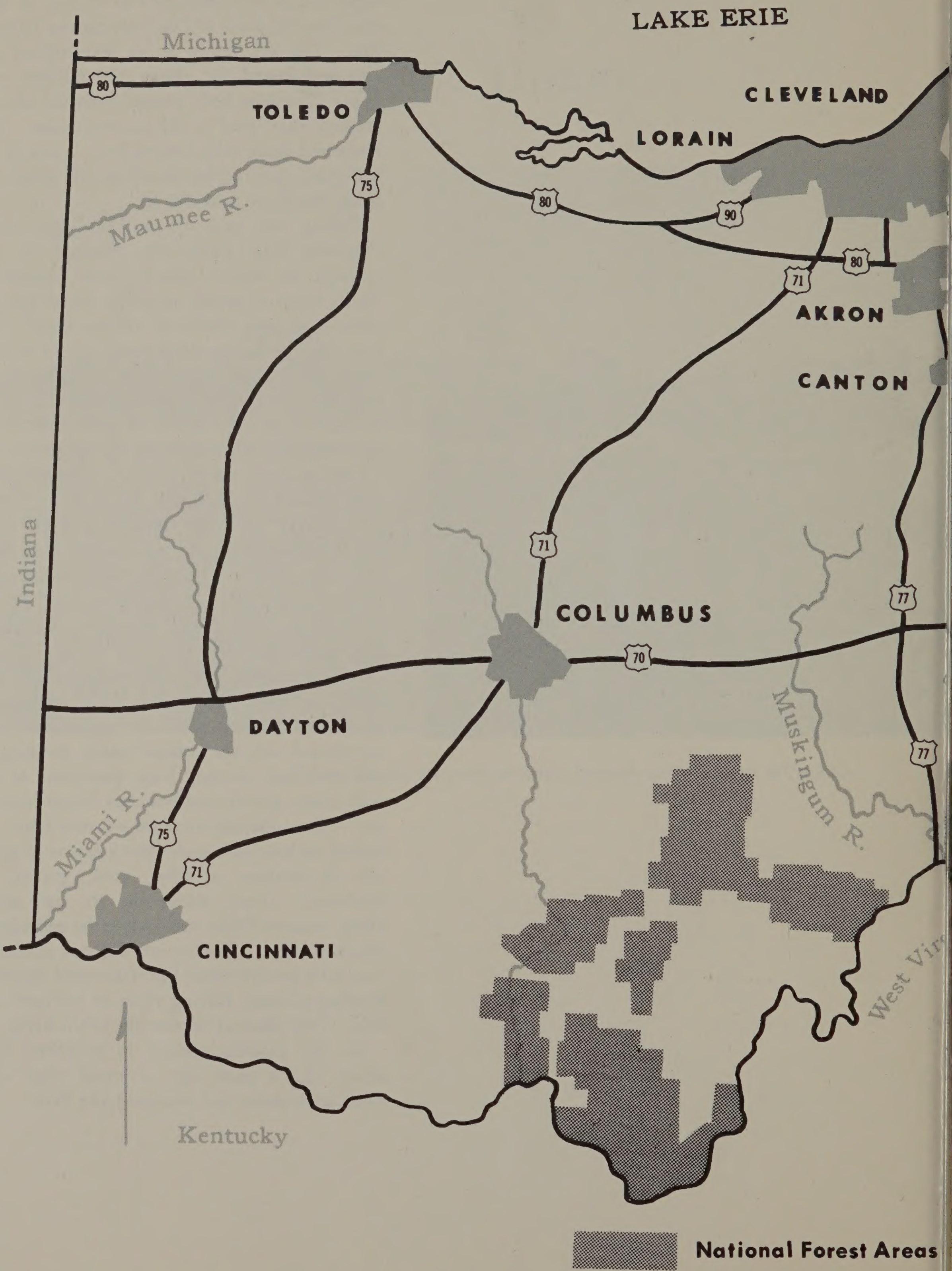
The bedrock in Ohio consists of limestone, shale, and sandstone which were originally deposited as soft sediments in or near an ocean that covered parts of Ohio during the Paleozoic Era. This era began about 600 million years ago and lasted for about 375 million years. Many limestone beds formed from the shells of animals that lived in the ancient ocean. Sandstone and shale beds formed from layers of sand and mud that accumulated on the ocean floor or on the shore near the sea.

During the last 100 million years of the Paleozoic Era, Ohio was covered by large swamps in which plants grew abundantly. Thick layers of partly rotted plants, called peat, formed on the floors of the swamps. From time to time rivers or the ocean spread layers of mud and sand over the beds of peat. During the 225 million years since the end of the Paleozoic Era, the layers of peat have slowly been changed to bituminous coal.

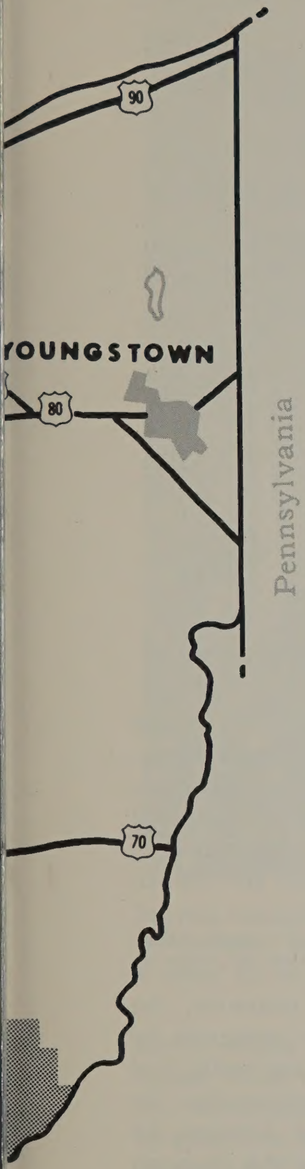
Ohio's landscape is much younger than the rocks in its hills and under its valleys. Most of the streams and lakes came into being during the Pleistocene Epoch, an ice age that began about a million years ago and ended about 10,000 years ago. During this time of long winters and cold summers, snow accumulating in Canada froze into sheets of ice several miles thick and hundreds of miles wide. These great sheets of ice, which are called continental glaciers because of their enormous size, flowed southward into the United States, gouging soil and rock and carrying huge quantities of clay, mud, sand, gravel, and boulders frozen into thin ice. These glaciers covered western Ohio, and buried its low hills under thick layers of glacial till (a mixture of clay, sand, gravel, and boulders). Later, when the ice had melted away, western Ohio was covered by swamps and shallow lakes. Glacial ice did not extend far into hilly eastern Ohio, but it dammed the north-flowing streams, forcing them to cut new channels. One channel became the Ohio River.

As the glaciers melted in northern Ohio, about 15,000 years ago, a broad river valley filled with water and became Lake Erie.

Facilities of Federal Natural


LAKE ERIE
Michigan
TOLEDO
CLEVELAND
LORAIN
AKRON
CANTON
Maumee R.
Indiana
COLUMBUS
DAYTON
Miami R.
CINCINNATI
Muskingum R.
West Vir
Kentucky
80
90
75
71
77
70
▨ National Forest Areas

Resource Agencies



U.S. Army Corps of Engineers

Division Office, Cincinnati

Bureau of Commercial Fisheries

Fishery Marketing Office, Cleveland
Biological Field Station, Sandusky

Bureau of Sport Fisheries and Wildlife

Management and Enforcement Office, Columbus
Predator and Rodent Control Office, Columbus
River Basin Studies Office, Lebanon
National Fish Hatcheries at Hebron and Senecaville
Ottawa National Wildlife Refuge, Oak Harbor
Ohio Cooperative Wildlife Research Unit, Columbus

Forest Service, Department of Agriculture

Central States Research Station, Columbus
Forestry Research Project locations at Athens, and Delaware
Ironton Ranger District, Ironton
Wayne Ranger District, Athens

Bureau of Indian Affairs

Employment Assistance Office, Cleveland

Geological Survey

Topographic Division, Columbus
Surface Water Engineering Office, Columbus
Quality Water Research Office, Columbus
Groundwater Engineering Office, Columbus
Paleontology and Stratigraphy Office, Columbus
Organic Fuels Office, New Philadelphia
Engineer in charge of Surface Water, New Philadelphia

Bureau of Mines

Health and Safety Office, St. Clairsville

National Park Service

Mound City Group National Monument, Chillicothe
Perry's Victory and International Peace Memorial National Monument, Put-in-Bay, Ohio

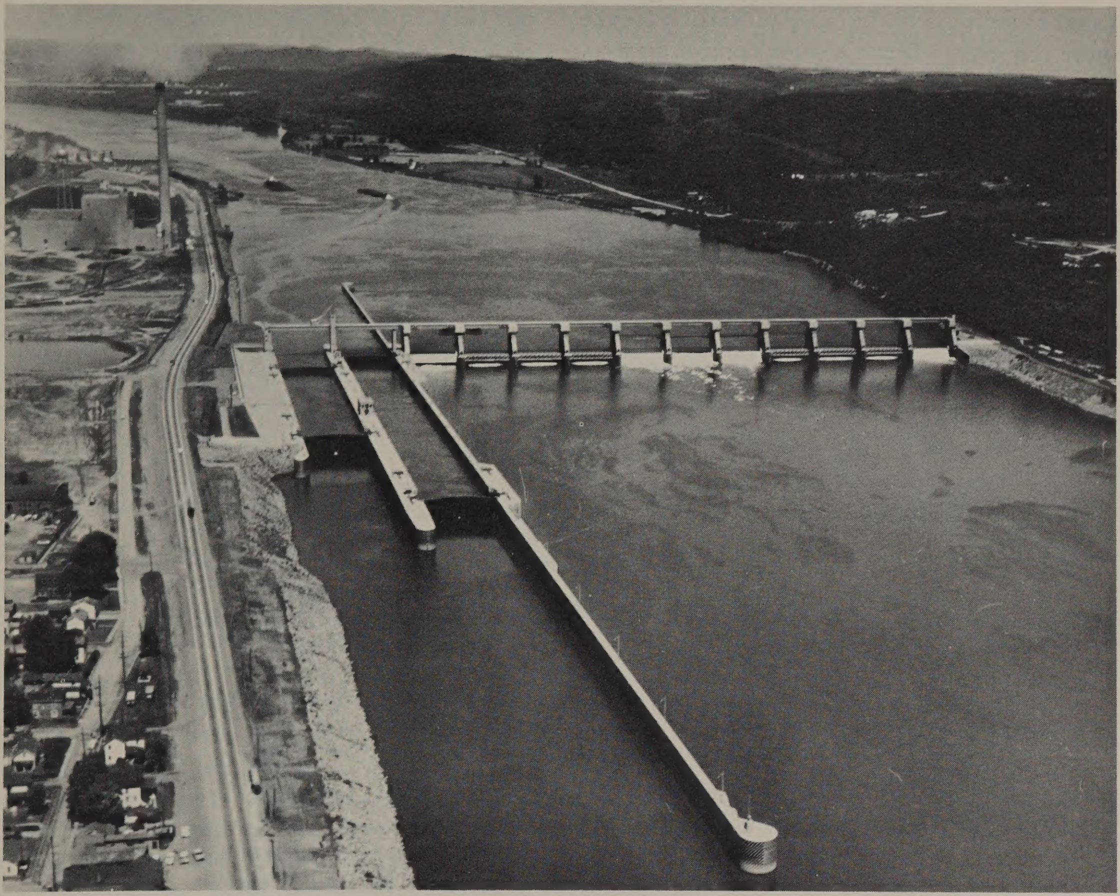
The natural resource functions of the Federal Agencies represented in this booklet are extensive and detailed and are only briefly described. Full information can be obtained by contacting the field offices listed on page 37 and elsewhere in this publication.

U. S. Army Corps of Engineer Programs

The water problems of the United States are complex—involving industrial and domestic water supply, irrigation, pollution control, fish and wildlife enhancement, hydroelectric power development, recreational use, flood control, and navigation. The U.S. Army Engineers' principal mission is flood control and navigation; however, because water is a natural resource which must be managed for many purposes, the Corps also plays a principal role in these other water resource activities.

The Buckeye State is divided into two major watersheds—that draining toward the Great Lakes and that toward the Ohio River. Slightly more than 70 per cent of the State is in the Ohio River Basin and it is in this area that the great majority of the Corps' flood control projects are located. Here the program includes a number of reservoirs on streams tributary to the Ohio River. Twenty of these are completed and in operation, one is currently under construction, and work on another should begin in the near future. In addition to the function of temporary storage of flood runoff, characteristic of all these reservoirs, most of them include conservation storage in varying degree. This feature contributes to the preservation of fish and wildlife and provides for extensive recreational activities. In some of the reservoirs, conditions permitted provision of additional storage for stream regulation in the interest of pollution abatement and industrial and municipal water supply.

Since it is impracticable to control the destructiveness of flood waters in all parts of the State solely by means of reservoirs, the program in Ohio also includes protection by local works comprising levees and walls, and in a few instances channel improvements, for many communities where flood damages are concentrated. Of the projects of this character in the Ohio River watershed portion of the State, seven have been completed at the largest damage centers. Also in this portion of the State, locks and dams have been built and operated as units of the overall system to assure dependable navigation on the Ohio River. Of the original 46 locks and dams needed for the canalization system on the Ohio, 28 were in the 450-mile reach of the river bordering the State. These improvements made possible the substantial volume of river traffic on the Ohio



The New Cumberland Locks and Dam on the Ohio River at Stratton is the first completed structure in the 20-year, billion-dollar Corps of Engineers modernization and reconstruction program for the Ohio River. The coal-burning power plant at upper left receives its fuel from barges using the locks.

River, which has grown to 80 million tons during recent years. A plan for replacement and modernization of the existing navigation structures on the Ohio River is currently being implemented. One of the new structures is nearing completion and two of the original structures have been removed. Several others currently under construction will be available for use in the near future.

In the Lake Erie watershed portion of the State, the program includes primarily harbors and channels along the lake. The shipping industry, long of great importance on the Great Lakes, has attained added significance since completion of the St. Lawrence Seaway so that further extensive improvements to many Great Lakes harbors are under way or being considered to accommodate the larger and deeper vessels using the Seaway. In recent years commodities aggregating over 100 million tons have moved through Ohio ports on the lake every year. Eight ports of significant commercial importance are included in the program in Ohio.

In addition to the improvements to large commercial ports, the Corps program on Lake Erie includes channel and harbor improvements of lesser scope to provide refuge and servicing facilities for the many small fishing and recreational craft operating along the lake shore. There are at present four federally-improved small harbors for such craft.

Still another activity of the Corps in the Great

Lakes basin is directed toward protection of lake shore property. Beach erosion control projects have been authorized at three publicly-owned lake frontages in Ohio and a study has been under way to consider the possibilities of protecting lake shore property against flood damage resulting from windstorms and high lake levels. Possible methods of regulating lake levels are also under study.

It should be recognized that generally these units are elements of coordinated plans in which the individual projects in Ohio are interrelated not only with each other, but also with other projects in a broad region. Thus, the program in Ohio may and often does benefit areas in other States, while areas in Ohio are benefited in like manner by elements of the program located in other States.

The survey portion of the Corps of Engineers' program in Ohio is one of the means of keeping the program abreast of changing needs and situations. This phase of the program is undertaken in response to specific authorizations

Projects in Ohio

- Navigation Projects Completed
  - Huron Harbor
  - Ohio River Navigation Project—Original Canalization
  - Ohio River at Gallipolis
  - Port Clinton Harbor
  - Put-in-Bay Harbor
  - Rocky River Harbor
  - Vermilion Harbor
- Flood Control Projects Completed
  - Cincinnati (Mill Creek) Local Protection Project
  - Delaware Reservoir
  - Dillon Reservoir
  - Ironton Local Protection Project
  - Massillon Local Protection Project
  - Muskingum River Reservoir System
  - Newark Local Protection Project
  - Portsmouth-New Boston Local Protection Project
  - Roseville Local Protection Project
  - Wellsville Local Protection Project
  - West Fork of Mill Creek Reservoir
- Multiple-Purpose Projects Completed
  - Berlin Reservoir
  - Mosquito Creek Reservoir
  - Tom Jenkins Reservoir
- Navigation Projects Under Way
  - Ashtabula Harbor
  - Cleveland Harbor
  - Conneaut Harbor
  - Fairport Harbor
  - Lorain Harbor
  - Sandusky Harbor
  - Toledo Harbor
  - Ohio River Navigation Project—Modernization Program
    - Captain Anthony Meldahl Locks and Dam
    - Greenup Locks and Dam
    - Markland Locks and Dam
    - New Cumberland Locks and Dam
    - Pike Island Locks and Dam
- Flood Control Project Under Way
  - Shenango Reservoir
- Multiple-Purpose Project Under Way
  - West Branch Reservoir
- Authorized Navigation Project
  - Belleville Locks and Dam
- Authorized Flood Control Projects
  - *Active Authorized Flood Control Projects*
    - Adena Local Protection Project
    - Caesar Creek Reservoir
    - Dillonville Local Protection Project
    - East Fork Reservoir
    - Frazeysburg Reservoir
    - Middleport Local Protection Project
  - *Other Authorized Flood Control Projects*
    - Belpre Local Protection Project
    - Big Darby Creek Reservoir
    - Buena Vista Local Protection Project
    - Cheshire Local Protection Project
    - Coal Grove Local Protection Project
    - Deer Creek Reservoir
    - Gallipolis Local Protection Project
    - Logan Reservoir
    - Manchester Local Protection Project
    - Marietta Local Protection Project
    - Millersburg Reservoir
    - Moscow Local Protection Project
    - Paint Creek Reservoir
    - Pomeroy Local Protection Project
    - Proctorville Local Protection Project
    - Racine Local Protection Project
    - Reno Beach-Howard Farms Area Local Protection Project
    - Rocky Fork Reservoir
    - Syracuse Local Protection Project
- Other Authorized Shore Protection Projects
  - Edgewater Park
  - Lakeview Park
  - White City Park

calling upon the Corps of Engineers to investigate problems related to the water resources development program. Thus, some 37 investigations of this nature pertaining to localities in the State of Ohio are in varied stages of completion at this time. They range in magnitude from consideration of the highly complex problem resulting from high water levels on the Great Lakes to the relatively simple problem of determining the advisability of providing flood protection works at individual localities. They include consideration of flood control, drainage, navigation, water supply, pollution abatement, recreation and related water and land uses.

The survey program affords opportunity for coordination of the planning activities of the Corps of Engineers with those of local interests and other agencies of government concerned with the water resources problems at hand.

Proposals are given consideration in detail sufficient to determine their technical and economic soundness and the degree of Federal interest involved. The findings are reported to Congress where they are used as a guide in regard to the advisability of adoption or modification of water resources development projects.

Forest Service Programs

The Forest Service, U.S. Department of Agriculture, administers a gross acreage of 1,455,113 within the State of Ohio, of which 107,907 acres are federally owned. In addition, the Forest Service cooperates with the State Forester in programs for management and protection of State and private forest lands and undertakes research activities for the better management of Federal, State, and private forest lands.

National Forest Administration

When the Ohio Valley was settled some 250 years ago, dense forests covered most of what is now the State of Ohio. Settlers cleared the land and burned the woods, moving west as the soil was exhausted and erosion gullied the fields. Commercial lumbering, which expanded rapidly in the last half of the 19th century, further aggravated problems of soil depletion and erosion.

Under provisions of the Weeks Law, and with State and County encouragement, the Forest Service has acquired 107,769 acres of these damaged lands in the past quarter century. Only land primarily suitable for watershed protection and timber production purposes was included in these acquisitions, which were originally designated as Purchase Units. In 1951, this land was established as the Wayne National Forest.

Like all National Forests, the Wayne is divided into ranger districts with a forest ranger in charge of each. The Wayne ranger districts are located at Athens and Ironton. A forest supervisor, assisted by a technical staff, is in charge of the overall administration of the Wayne and also of the Hoosier National Forest in Indiana. His headquarters are at Bedford, Ind.

Over the years, Forest Service technicians and scientists have worked with nature to restore the soil and vegetative cover on the complex watersheds comprising the Wayne National Forest, managing its many resources on a sustained yield basis so as to provide the maximum benefit for the greatest number of people, now and in the years to come.

Today, Wayne National Forest offers a bounty of timber, water, wildlife and recreation. There are 88,000 acres of National Forest commercial

Included in development plans for Ohio's Wayne National Forest will be construction by the U.S. Forest Service of 38 more campgrounds and picnic areas to accommodate the large number of recreationists.

timberland in Ohio, from which 4,292,000 board feet of timber valued at $38,633 were cut in fiscal 1962. Nearly 125,000 recreationists enjoy the Wayne National Forest annually.

On the National Forests, wildlife is recognized as a primary resource. In Ohio, the Forest Service is responsible for maintaining satisfactory game and fish habitat conditions on Forest Service lands, while the State is responsible for protection and management of the wildlife. Hunting and fishing are permitted on the Forest within the limitations of Ohio's fish and game laws.

To keep pace with the needs of an expanding population, the Forest Service has embarked on a "Development Program for the National Forests." This is aimed at managing and developing all resources to meet the demands anticipated by 1972 and includes long-term planning towards the year 2000.

Specific plans for the State of Ohio, under the Development Program, include: planting of 14,000 acres to trees; treatment of 31,000 acres to produce better timber; construction of 38 campgrounds and picnic areas with information services provided where there are large concentrations of visitors; topographic mapping of 4,750 square miles and surveying of 956 miles of property lines; construction of 63 miles of multipurpose roads and supplemental work on roads constructed by timber purchasers.

Other projects for Ohio in the Development Program are: construction of 20 wildlife watering facilities; improvement and development of small and big game range; rehabilitation of eroded lands and stabilization of gullies, roads, and streams; reduction of hazardous fuels and building of firebreaks; intensification and acceleration of forest insect and disease control.

State and Private Cooperation

Public lands under multiple-use management in the Wayne National Forest and 18 State forests include a small but important part of Ohio's

5.3 million acres of forest lands. Nearly 5 million acres of commercial forest land are in private ownership. Of this acreage, 141,000 owners hold less than 100 acres apiece.

The State employs 15 farm foresters on a cost-sharing basis with the Forest Service. These farm foresters provide professional and technical services to private owners who want to place their woodlands under good forest management. They advise on reforestation of farmlands unsuited to other agricultural uses; they offer counsel on marketing methods and they help select trees for cutting.

The Forest Service also cooperates with the State in other phases of forestry: insect and disease control, reforestation, nurseries, and fire protection. It works with the State on a Continuous Forest Inventory on the Dean State Forest in Lawrence County. This inventory records growth, mortality, and timber cut, making possible a high level of planned forest management.

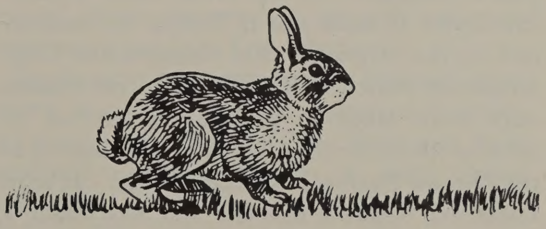
Under the provisions of the Small Watersheds Act of 1954 (Public Law 566) three watershed projects are now being developed in Ohio, with five more planned through cooperation by associations of private landowners, the State of Ohio, the Soil Conservation Service, and the Forest Service. Forestry work on these water sheds includes tree planting, fire protection, sustained yield management of commercial timberlands, and timber stand improvement measures, with special emphasis on improving the hydrologic condition of the woodlands involved. These land-management practices are aimed at watershed protection and flood prevention, as well as general resource conservation.

Cooperation between Federal, State, and private owners and managers of forest lands has made possible increasingly high levels of forestry practices in Ohio.

Research

Forest Service research in Ohio began in 1927 with the establishment of the Central States Forest Experiment Station at Columbus. A field office is located in Athens and run in cooperation with Ohio University, and a number of Forest Service research installations are maintained throughout the State.

Research projects conducted from the Central States Forest Experiment Station include studies in forest hydrology, silviculture, pest control, small-woodland management, and wood utilization. In a number of projects, the station has cooperated with industry to conduct mutually beneficial research. For example, at the Mead Experimental Forest in Scioto County established and underwritten by the Mead Paper Corp., station technicians and industry foresters are conducting research in the management of hardwood forests for pulpwood and other timber products. Among other industrial cooperators is the Ohio Power Co., which has agreed to supply the Station with funds, land, and labor to conduct research on the biological control of the locust borer.



Fish and Wildlife Service Programs

The rollcall of the activities of the Fish and Wildlife Service in Ohio brings up such programs as exploratory fishing and biological research on Lake Erie, management of two National Wildlife Refuges and two National Fish Hatcheries, and pursuance of such programs as predator and rodent control, game law enforcement, and river basin studies concerned especially with the review of the Ohio River Basin flood control proposals.

Then there are such Fish and Wildlife Service programs as economic studies to help the lake fishing industry meet the problems caused by the changing conditions relating to important fisheries, marketing and statistical programs and cooperative wildlife research activities with State and private organizations.

Probably the two most important Service programs, at least the two upon which most attention is focused, are those relating to the preservation and development of some choice Lake Erie duck marsh and the biological, technological and economic efforts which are being made to help commercial fishermen adjust to the changing conditions of Lake Erie. Important also to thousands of anglers are the fish hatchery activities which result in distribution of fish to five States.

The purchase of 4,915 acres in the heart of the prairie marshland on the south shore of Lake Erie about 15 miles east of Toledo was authorized by the Migratory Bird Conservation Commission in March 1961. Within a few months steps were taken to acquire the first of 32 ownerships in the area which is now known as the Ottawa National Wildlife Refuge. It is in Lucas and Ottawa counties and has about a 3-mile frontage on Lake Erie. It includes the famous Pintail Marsh.

The marshes along Lake Erie are considered to be the best remaining waterfowl habitat in Ohio. The refuge lies in the major flight line used by ducks and geese migrating through western Ohio. Development of the proposed area as a refuge will insure maintenance of the covertypes essential to waterfowl needs. It is also considered that under proper management the area can be developed into a highly productive waterfowl breeding area. Indigenous species of upland game and small mammals will be managed in addition to geese and ducks.

The West Sister Island Refuge is an 82-acre island in western Lake Erie. This area was established as a refuge under an Executive Order dated August 2, 1938, for nesting colonies of black crowned night herons and other colonial birds such as great-blue herons and American egrets. The area is not staffed but is administered from the Ottawa Refuge.

Until recent years commercial fishing was conducted out of nearly every city and town of Ohio located on the shores of Lake Erie. This condition is changing as many operators are going out of business because of declines in abundance of valuable food fishes such as blue pike, wall-eyed pike, whitefish, and cisco and as they have not been able to compete with other species sold commercially in the State.

With declines in abundance of valuable species of fish substantial increases in abundance of low or medium value fishes have taken place. Species such as smelt, perch, alewife, sheepshead, and gizzard shad are very abundant, but are exploited but little in Ohio waters. Although low value fish are plentiful a profitable industry will not develop until necessary technological advances are made, markets for the products are developed, and harvesting methods changed.

In an attempt to solve the problems confronting the commercial fishery of Lake Erie the Fish and Wildlife Service has a number of programs underway in the fields of biological research, technology, exploratory fishing and gear research, marketing, and economics.

The headquarters laboratory of the Fish and Wildlife Service is located on the University of

One of two fish hatcheries managed by the Fish and Wildlife Service, the warm-water National Fish Hatchery at Hebron produces bass and bluegill for stocking farm ponds and reservoirs in Ohio and adjoining states.

Michigan campus at Ann Arbor, Mich. Two scientists at this laboratory are concerned with studies of the water quality, circulation, and physical phenomena of the Great Lakes. Much of their effort has been devoted to studies in Ohio waters of Lake Erie.

These scientists collaborating with scientists of the States of Ohio, Pennsylvania, Michigan, and Province of Ontario found that pollution of Lake Erie waters has caused a phenomenal change in the aquatic environment.

This appears to be the major reason for declines in the once abundant stocks of blue pike, cisco, and whitefish. The future of Lake Erie as a producer of a valuable food fish does not look promising. This fertile lake, however, should continue to produce large quantities of low value commercial species.

The Service has a small biological field station at Sandusky, Ohio. Here three biologists and two technicians carry out research on the life history and migration routes of major commercial species and annually determine the potential contribution to the fishery of incoming year classes of fish. Biologists at this station coordinate their studies with the research team at the Ann Arbor Laboratory in determining relationships between physical and biological environmental conditions and the distribution and abundance of commercial fish.

The research vessel, *Musky II*, moored at Sandusky is used for carrying out research on Lake Erie. The staff works in close cooperation with biologists of the State of Ohio to achieve an efficient cooperative program. Both groups in turn work with the Lake Erie Fish Management Committee, a Federal-State-Provincial group interested in research and management of the Lake Erie fisheries.

Exploratory fishing operations utilizing otter-trawl gear, a method of commercial fishing previously unfamiliar to Ohio fishermen, have produced significant catches of smelt almost year-round in the Central and Eastern Basins of Lake Erie. The best catches of smelt so far during exploratory fishing operations have been taken off Ashtabula and Conneaut where up to 5,000 pounds per hour and 40,000 pounds in a 6-day period were landed.

The new exploratory fishing vessel *Kaho*, although based on Lake Michigan, is scheduled to undertake several exploratory fishing cruises in Lake Erie during 1962. The objectives of the work utilizing the *Kaho* are to locate, define, and estimate the commercial potential of concentrations of under-utilized fish; to determine the suitability of the lake bottom for trawling in various areas; and to furnish the commercial fishing industry an analysis of the areas explored soon after each cruise is completed.

Other Service operations relative to commercial fisheries which may help the Lake Erie situation but which are not necessarily geared to it include inspection and certification of products to assure the housewife high quality merchandise, a market education program which stresses the values of underutilized fish and such aids as statistics and market news.

The two National Fish Hatcheries are located in Hebron and Senecaville which distributes channel catfish, large-mouth bass and bluegills in Ohio, Pennsylvania, and West Virginia. This distribution is made in cooperation with the State fish and game agency of the respective States. In addition the Service supplies fish to the Cincinnati laboratory of the U.S. Public Health Service for bioassay work.

For the next several years, the most important single activity of the Service's river investigation program in Ohio will be in connection with the Ohio River Basin Review Survey being conducted by the Corps of Engineers. Essentially this is a reanalysis of the Corps' 1938 flood control plan for the Ohio River Basin. Besides flood control, other aspects including low-flow regulation, water supply, recreation and fish and wildlife conservation are now being considered.

In Ohio the six individual reservoir projects that are currently under consideration in the Scioto River basin will present some excellent waterfowl opportunities. The proposed Buck Creek Reservoir near Springfield and Caesars Creek and East Fork projects in the Little Miami River drainage should also provide some waterfowl habitat. These impoundments would also supply additional fishing waters. The Fish and Wildlife Service has made these general recommendations for each individual Corps of Engineers project in the State:

Although stream fisheries are important, reservoirs have a better potential for fulfilling public demands than streams;

Most Ohio streams suffer from heavy siltation during most of the year and low flows in late summer. Stream fisheries can be improved below dams through insured minimum flows and through protection from silting and scouring;

Through the construction of the proposed impoundments in the Scioto and Little Miami Basins a complex of waterfowl resting and feeding habitat of sufficient magnitude and dispersal could be developed to cause a signicant stopover by fall migrants;

Forest game habitat is not in short supply and thus there will be a few instances where any extensive comprehensive or individual coverage of the forest game aspect will be required. Possible exceptions might include key habitat for species being established such as turkeys or Reeves pheasants;

Farm game habitat open to public hunting is at a premium. Any land that can be made available for public hunting will be of major significance. Conversely any loss of existing public hunting ground will be highly detrimental. Each area opened to public use is of major importance. However, the most extensive acquisition and intensive management program possible will fall far short of providing adequate hunting opportunity for all.

Wildlife research is effected and wildlife biologists are trained at the Cooperative Wildlife Research Unit at Ohio State University. This cooperative program is sponsored by the Fish and Wildlife Service, Ohio State University, the Wildlife Management Institute and the Ohio Department of Natural Resources. The program began in Ohio in 1950. Projects include biological studies on muskrats and cottontail rabbits and other animals, animal diseases, research, hunter psychology, techniques for evaluating any insecticide damage to forest fauna, and numerous other specific wildlife problems.

Two Game Management Agents enforce the Federal Game Laws. State game laws in many instances are similar to or more restrictive than Federal laws and there is an active body of State officers enforcing game laws and regulations.

Predator and rodent control programs are maintained in cooperation with Ohio's Department of Agriculture, the Ohio Department of Health, Bowling Green State University and numerous associations.

Under the Federal Aid in Wildlife Restoration Act (Pittman-Robertson) and the Federal Aid in Fish Restoration Act (Dingell-Johnson) the gross obligations by project types by the State of Ohio during fiscal year 1961 were as follows:

Project type	Pittman-Robertson	Dingell-Johnson
Research	$193, 660	$39, 000
Development and operations	369, 731	25, 875
Land acquisition	94, 331	121, 969
Coordination	20, 812	6, 937
Total	678, 534	193, 781

Ohio is currently using a substantial portion of its Pittman-Robertson funds for the development, operation, maintenance, and management of wildlife areas under State control and habitat improvement on private lands. State controlled areas include lands purchased by the State and such Federal lands on which cooperative agreements have been executed. All phases of wildlife research are conducted in the fields of waterfowl, farm game, and forest game. The cottontail rabbit, because of its importance to Ohio hunters, is the object of special effort to provide information which would help to increase its production. Similarly, pheasants are subject to special effort. Intensive investigations are under way to discover means of increasing waterfowl production of Lake Erie marshes and a close check is maintained on waterfowl abundance, migrations, production and hunter kill. Forest game species are accorded full treatment in collection of life history and behavior information of value to management.

The principal use of current Dingell-Johnson funds is for the reconstruction of a jetty and sea wall to provide fishermen access to Lake Erie, and the reconstruction of three ponds to provide a local fishery in the vicinity of Paulding. A statewide fish inventory and evaluation project has been started to provide statistically reliable information on fish propulation characteristics and on the effectiveness of basic management practices. A total of 671 acres of land was purchased in Ross County for the development of a 133-acre public fishing lake.

Geological Survey Programs

Examination and sampling of the stratigraphic succession of loess deposits, glacial tills, valley train deposits, and lacustrine deposits are in progress along the Ohio River Valley to aid in understanding its geologic development. Another report, in the final stages of preparation, summarizes results of a detailed study of the geology and coal resources of Belmont County. This study was conducted in cooperation with the Division of Geological Survey, Ohio Department of Natural Resources.

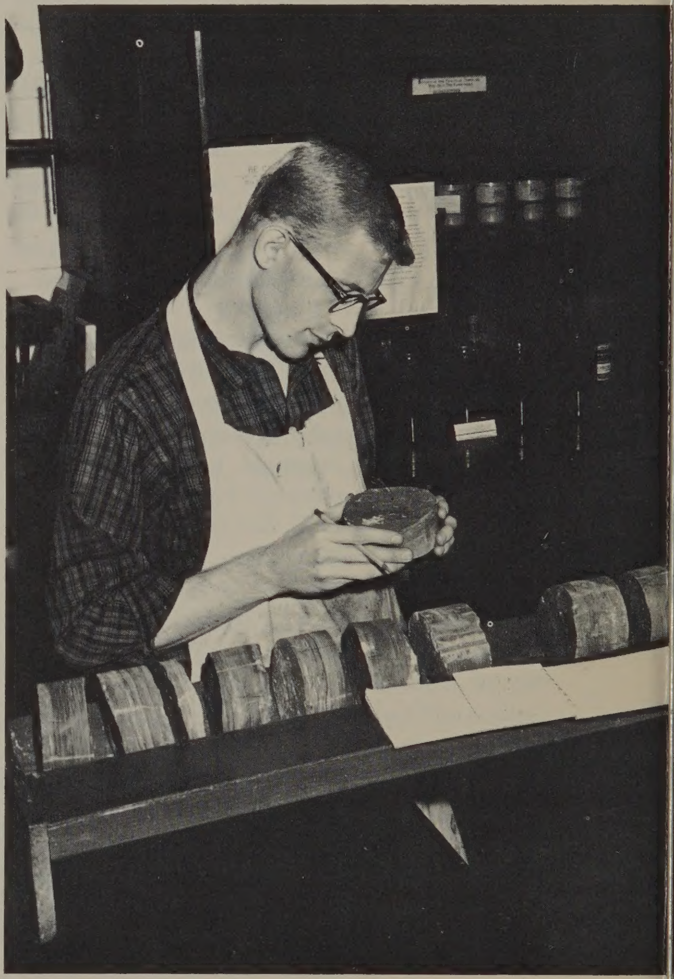
As part of a continuing geophysical investigation of the structure of the Appalachian basin, aeromagnetic and gravity profiles are being made at regular intervals across the strike of the basin. These profiles include traverse lines through parts of eastern and southern Ohio. Data from this investigation are being used to determine the thickness of sedimentary rocks and the structural trend of the underlying basement rocks. Closely allied to this investigation are current geophysical studies of the tectonics of the east-central United States. Aeromagnetic and gravity data are being obtained along an east-west strip 100 miles wide that extends from Illinois, through Ohio, to the edge of the continental shelf.

Information about other geologic work in progress in Ohio can be obtained from the Division of Geological Survey, Ohio Department of Natural Resources, in Columbus.

Topographic quadrangle maps at 1:62,500 scale (approximately 1 inch equals 1 mile) which were surveyed during the period of 1893 to 1916, have been published for the entire State of Ohio. Much of this mapping was done under a cooperative program between the State and Federal Governments wherein the cost was shared on a 50–50 basis.

It has been recognized that larger scale up-to-date maps are required to meet the present-day needs for detailed geologic, hydrographic, and engineering studies; for planning natural resource development; and for modern highway projects, among many other uses.

Between 1950 and 1958, topographic quadrangle maps of 1:24,000 scale of about 7,000 square miles in the vicinities of Cleveland, Toledo, Columbus, and Dayton were published following surveys.



A Geological Survey expert examines core samples of coal to aid in developing Ohio's tremendous fuel resources.

In 1959, an expedited cooperative program was initiated to complete the 1:24,000-scale mapping of the State, some 34,000 square miles, by the end of 1962. Since 1958, topographic quadrangle maps of an additional 7,000 square miles have been published and the remaining quadrangles are in some phase of progress. It is anticipated that most of these maps will be ready for publication by December 1962.

Information on the various geologic and topographic maps, mineral resources maps, water resources reports, and other geological survey publications relating to Ohio can be obtained by writing the Director, Geological Survey, Department of the Interior, Washington, D.C., 20240

Programs of the Bureau of Indian Affairs

The Branch of Relocation Services has a field Relocation Office in Cleveland, the only BIA Office in Ohio. The staff of 12 people provides assistance to Indian people who voluntarily move from Indian reservations throughout the United States to Cleveland, where opportunities for self-sufficiency are more adequate. These people are assisted in finding satisfactory employment and housing, and in solving the problems of adjusting to a new and strange environment. The office also helps Indians in vocational training. Eligible trainees are enrolled at Government expense in local schools, both public and private.

The Buckeye State is proud of its rich Indian history and generous in commemorating it. Many of Ohio's rivers and streams, counties and towns bear Indian names. In numerous communities, statues, museums, and other memorials recall the long and vivid history of the Indian tribes in Ohio.

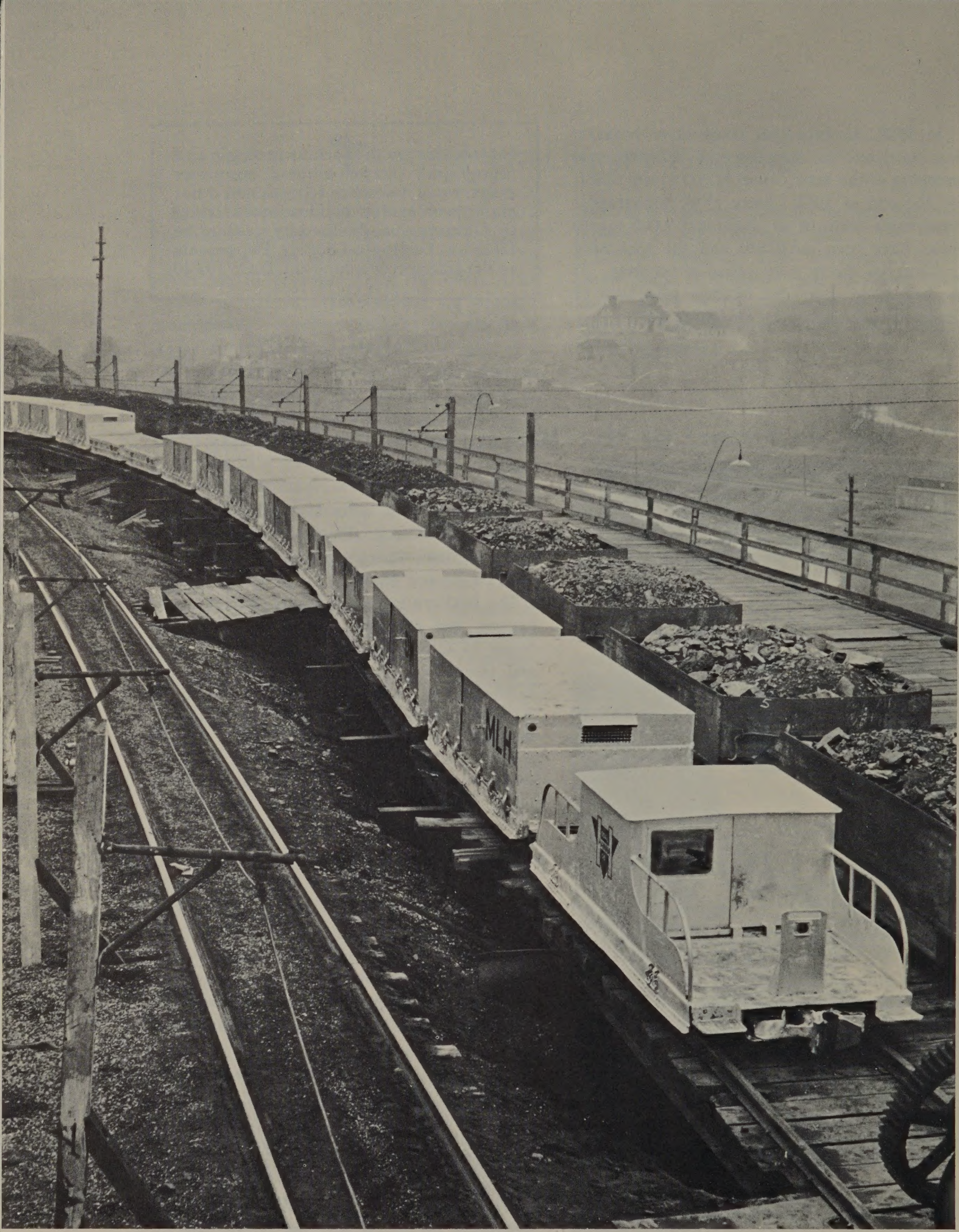
Bureau of Mines Programs

The Department of the Interior's Bureau of Mines long has recognized the importance of Ohio's mineral industries to the Nation. In cooperation with industry and with other governmental and State agencies, the Bureau works to promote wise development and use of the Buckeye State's mineral resources and to improve health and safety conditions in its diversified mining and mineral-processing industries.

At several modern research centers in nearby States, the Bureau carries on varied research programs that benefit Ohio's mineral industries, as well as those of other mineral producing areas. The Bureau collects statistics on accidents, employment and production. Health and safety services to mines and mineral-processing plants are provided by a Subdistrict office at St. Clairsville, Ohio.

Coal Research

To promote full development and use of Ohio's abundant coal resources, the Bureau conducts research on extraction, processing, and utilization of bituminous coal and coke. Investigations are under way to develop hydraulic techniques for mining coal underground and for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Light-colored enclosed cars carry miners into an Ohio coal mine as another string outbound hauls waste rock and shale. The Bureau of Mines promotes development and use of Ohio's mineral resources and helps improve health and safety conditions in its mining industries.

transporting it to the surface. Safer extraction of coal is the object of the Bureau studies to develop methods of degasifying coal beds before and during mining operations.

Coal preparation research, including studies of coal washability and performance of coal-washing equipment, is aimed at reducing costs and improving fuel quality.

Extensive research is being performed to expand the uses of bituminous coal. Bureau scientists and engineers are working to develop a coal-fired gas turbine that can be used by large power plants to generate electricity. They are also experimenting with methods of gasifying coal to make synthesis gas or hydrogen and with techniques for converting coal to pipeline gas.

Other Bureau studies from which Ohio may benefit concern the combustion of pulverized coal for direct conversion to electricity, the production of chemicals from tars obtained by carbonizing coal at low temperatures, the pretreatment of coal to make it more amenable to low-cost gasification processes, and the carbonization of coal to produce chemicals and metallurgical coke.

Petroleum Research

To encourage maximum recovery of Ohio's crude oil reserves, the Bureau is conducting several investigations of immediate value to the State's petroleum producers. A study of Ohio oil fields is part of a comprehensive Bureau survey of the past history, present status, and future possibilities of all eastern oil fields. Bureau researchers also are developing techniques for secondary oil recovery and are helping to adapt favorable methods to individual fields. This work is designed to increase petroleum recovery, improve processing methods, and promote the economic health of the oil industry. In addition, work is being done on problems of transporting and storing crude petroleum and its products.

Research on Metals and Nonmetals

Ohio's large and diversified metal industries also are helped by Bureau research, which yields the knowledge they need to keep pace with America's rapidly advancing technology. The increasingly important supplies of ferrous and nonferrous scrap and other waste materials generated by these industries are important subjects of metallurgical research, which seeks improved methods for recovering valuable metals and alloys from scrap, waste, and low-grade ores. The attention of Bureau metallurgists also is being focused on ways to improve efficiency in making pig iron and steel. Other Bureau research is helping to reduce mining costs by finding ways to design better mine structures and to stabilize ground more effectively, and by increasing safety and efficiency in other phases of mining.

Health and Safety Activities

The Bureau's health and safety activities serve all of Ohio's mineral industries. Bureau scientists test equipment to assure its safe use in underground mines; study the occurrence and hazards of mine gases and devise ways to protect miners against them; and develop better methods for roof support, mine ventilation, and dust control. Highly-trained Bureau employees inspect coal mines in accordance with provisions of the Federal Coal-Mine Safety Act.

Perhaps the most effective safety devices of all are the Bureau's first-aid and accident-prevention courses, its safety lectures and demonstrations, and its series of training films and publications. Through these media, the mineral industries of Ohio and the Nation are informed as to the latest and best methods for safeguarding the lives and health of those who extract and process metals, nonmetals, and fuels.

National Park Service Programs

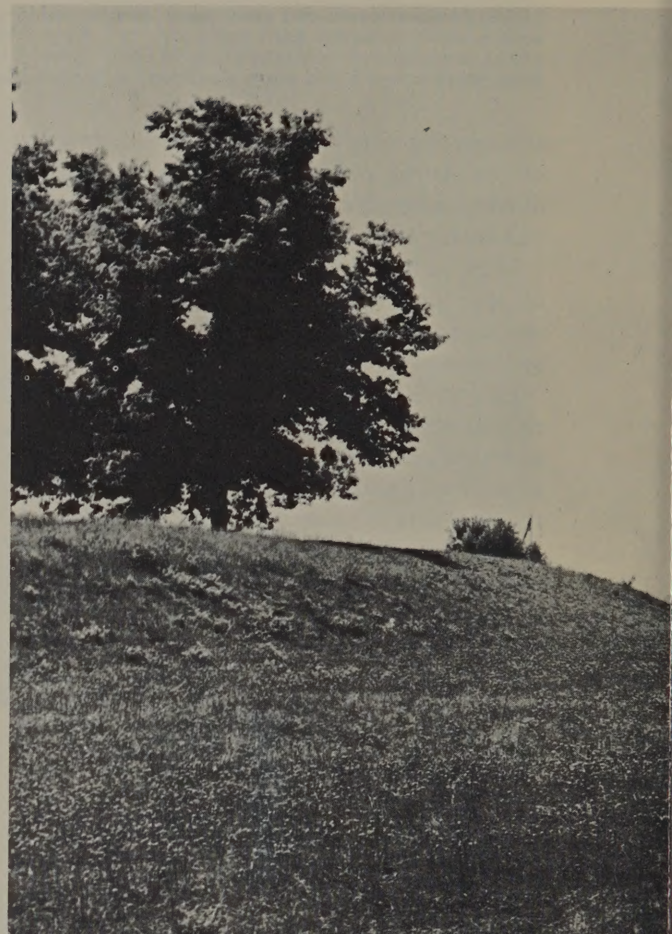
The National Park Service administers two areas in Ohio: Mound City Group and Perry's Victory and International Peace Memorial National Monuments, described earlier in this book.

The National Park Service's long-range development plans for Perry's Victory and International Peace Memorial include the rehabilitation of the exterior of the monument shaft as well as the rehabilitation of the upper and lower terraces. Other plans include the acquisition of 11.2 acres of land to provide land for the development of a much-needed visitor center, administrative headquarters, employee housing, and service facilities. Sufficient area is also needed for providing a landscaped approach mall for visitors.

The Mound City National Monument has an attractive new Visitor Center, resulting from the National Park Service's long-range development plans.

The two National Monuments administered by the Park Service in Ohio are treasured examples and reminders of our American heritage. The historic places inspire us all to renewed faith in the American tradition.

The real accomplishments of the National Park Service's long-range planning will be measured by the results it brings to the American people—pride in the Government of the United States, love of the American land, and faith in its destiny.



Mound City National Monument, one of two areas in Ohio administered by the National Park Service, has a new Visitor Center for those wishing to see a preserved site of the American past.

Bureau of Outdoor Recreation

While the Bureau of Outdoor Recreation manages no land, its functions are of significance to the citizens of the State and to tourists because they serve to increase the supply of outdoor recreation opportunities within the State.

The Bureau provides technical services and planning and survey assistance in outdoor recreation to States and local governments. It also assists in preparation of standards for statewide recreation plans and, upon authorization by Congress, will administer Federal financial grants-in-aid for State recreation planning, acquisition and development.

The Bureau, created by Presidential Order and established in the Department of the Interior by order of Secretary Stewart L. Udall in the spring of 1962, correlates related outdoor recreation programs of the various Federal agencies and bureaus operating in the State; is responsible for formulating a nationwide outdoor recreation policy and plan based on State, regional and Federal plans; sponsors and conducts recreation research; and encourages interstate and regional cooperation in outdoor recreation projects. It also works on other projects assigned by the Secretary of the Interior and by the President's cabinet-level Recreation Advisory Council.

YACHT CLUB
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Interest in outdoor recreation is reflected by the growing number of boating, yachting and water sport clubs on Ohio waterways. This is a scene at the Lakeside Yacht Club, Cleveland.

Ohio's Future

Ohio—the Buckeye State—is, as you have seen from this booklet, an area rich in natural resources, and, based on these resources, and those from other areas, a bustling manufacturing and industrial area with few peers in the Nation.

Ohio has learned through difficult experience that conservation and wise use and development of the resources of land and water mean sound and continuing progress, and it is giving ever-increasing attention to these vital programs.

The natural resource agencies of the Federal Government have made important contributions to the State's growth and progress, and their efforts will be increased and intensified in the years to come.

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CREDITS

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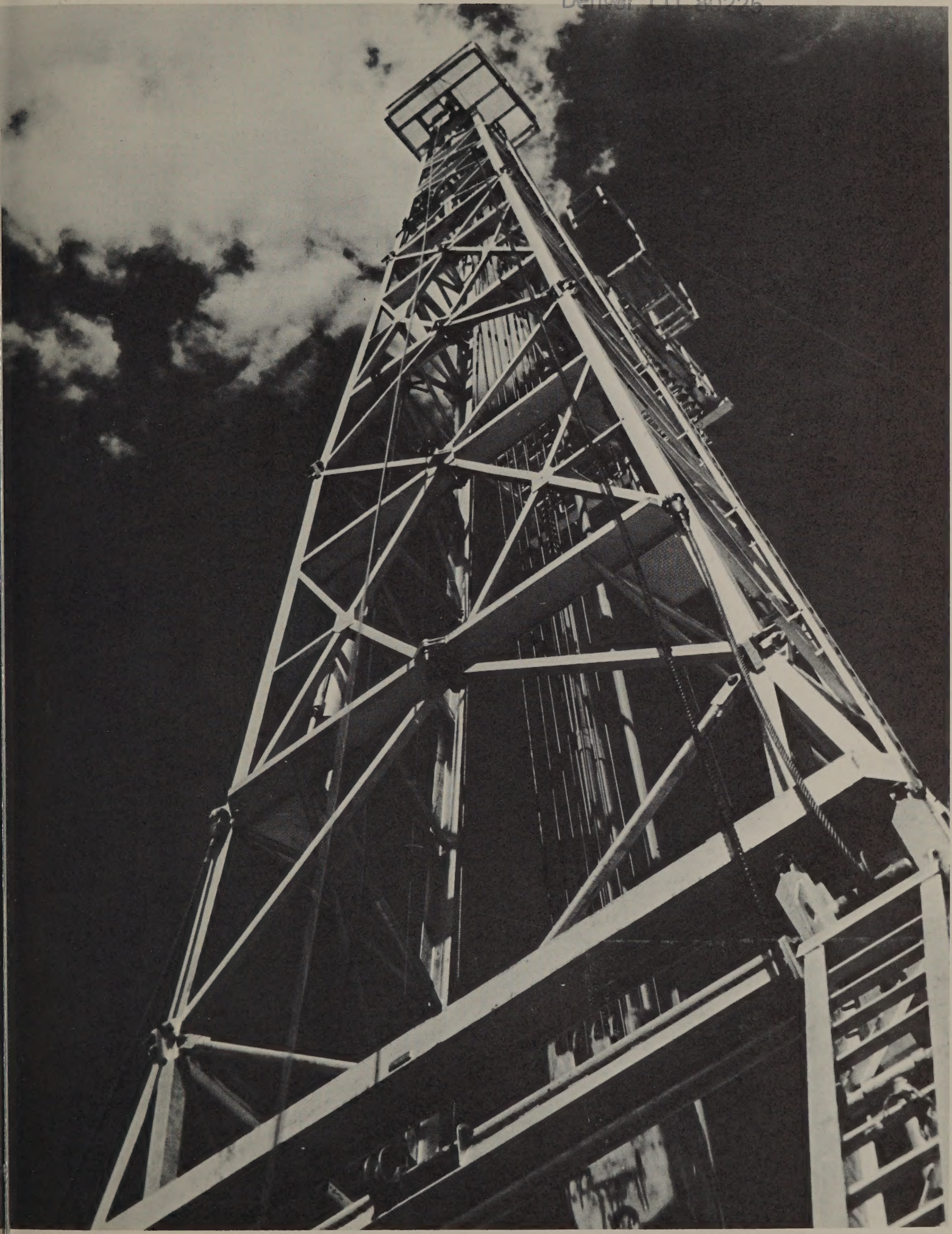

THE GREAT SEAL OF THE STATE OF OHIO

Created in 1849, the Department of the Interior—a Department of Conservation—is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

March 3, 1849